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THE MEXICAN AND CENTRAL AMERICAN SPECIES OF FICUS

By PAUL C. STANDLEY

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THE MEXICAN AND CENTRAL AMERICAN SPECIES OF FICUS.

By PAUL C. STANDLEY.

INTRODUCTION.

The best-known representatives of the genus Ficus are the common cultivated fig, *Ficus carica*, and the rubber plant, *F. elastica*. The genus is a very large one, including, according to Engler,[1] about 600 species. The actual number is considerably greater, however, for many species have been described in the last 25 years, especially from Africa and the Philippine Islands. The species are distributed throughout the Tropics, but they are most abundant in the East Indies and Africa. Thirty-three are reported from the West Indies by Warburg in his recent revision of the West Indian representatives of the genus, and about 50 are known to occur in South America. In the present paper 41 species are enumerated for Mexico and Central America. It is a remarkable fact that only two of these are common to the West Indies and Central America, and one of them is doubtfully indigenous to the latter region.

The first species to be described from the area here treated was *Ficus calyculata*, published by Philip Miller in 1768.[2] Unfortunately the description is so brief that Miller's plant can not be identified with certainty. Kunth,[3] in 1817, described five new species from Mexico. In 1851 Liebmann published [4] the first extensive enumeration of the Mexican and Central American species, basing his report chiefly upon his own collections and those of Örsted. His list included 29 names, most of which were new. In 1862 Miquel also published [5] a list for the same region, which included 40 names, several of them representing new species. Other authors have described isolated species, but most of those heretofore published from the area under discussion were founded by Liebmann

[1] In Engl. & Prantl, Pflanzenfam. 3[1]: 89. 1889.
[2] Gard. Dict. ed. 8. Ficus no. 11.
[3] In H. B. K. Nov. Gen. & Sp. 2: 46–49.
[4] Dansk. Vid. Selsk. Skrivt. V. 2: 319–333.
[5] Versl. Med. Kon. Akad. Amsterdam 13: 407–414.

and Miquel. Hemsley, in 1883, listed [1] 44 species of Ficus from Mexico and Central America, a number slightly in excess of that recognized by the present writer.

The nomenclature of the Central American species has been found to be in a chaotic state, and the material in American herbaria, as a consequence, for the most part incorrectly named. Scarcely any attempts, apparently, have been made to identify the species of Kunth, Liebmann, and Miquel, and some of the most distinct species have been redescribed, in spite of the fact that the early descriptions were usually ample and carefully drawn.

Chiefly as a result of a better understanding of the characters, obtained from the great amount of material now available for comparison, the writer has found it necessary to reduce to synonymy many of the early names, and in some cases to unite under a single name two or more published by an author at one time.

While many of our species are constant in their characters, some are so variable that two collections may seem to represent quite distinct species until intermediate specimens are examined. Some characters which have been used to separate species are now found to be unreliable. Consequently, it is not improbable that certain species here recognized will have to be reduced when still more ample collections are obtained.

Ficus is usually subdivided into five to eight sections or subgenera. In the Western Hemisphere only two are represented, Pharmacosyce and Urostigma, the former exclusively American. Attempts have been made to divide the genus into several genera, and for a time Urostigma and Pharmacosycea were recognized as distinct genera. Some authors have united the two American subgenera under the subgenus Urostigma, but while the differences between the two are not very great, in the case of the Central American species they happen to be easily determinable. All recent authors have deemed it best to preserve Ficus in its broad sense.

In making the present revision the writer has examined, besides the collections in the National Herbarium, those in the Gray Herbarium, the herbarium of the Field Museum of Natural History, and the herbarium of the University of California. To the curators of those collections he is greatly indebted for the opportunity of studying the additional material.

[1] Biol. Centr. Amer. Bot. 3: 143–148.

SYSTEMATIC TREATMENT.

KEY TO THE SPECIES.

Receptacles solitary; involucre trilobate; stamens 2. (Subgenus PHARMACOSYCE.)
- Leaf blades hirtellous or short-pilose beneath; receptacles pilose or hirtellous ..... 1. *F. glaucescens.*
- Leaf blades glabrous or merely scabrous beneath; receptacles glabrous or nearly so, at least in age, or sometimes scabrous.
  - Young branches densely pilose-sericeous. Leaf blades glabrous, gradually acute or acuminate at the apex ..... 2. *F. radulina.*
  - Young branches glabrous or finely and sparsely puberulent.
    - Lateral veins of the leaf blades very coarse and stout, 1.5 to 4.5 cm. apart, about 10 on each side; leaf blades very large, 12 to 24 cm. long, 6 to 12.5 cm. wide, glabrous, rounded and abruptly apiculate at the apex ..... 3. *F. tonduzii.*
    - Lateral veins slender, usually not more than 1 cm. apart; leaf blades mostly much smaller.
      - Leaf blades gradually acute to long-acuminate at the apex.
        - Blades of the leaves about 4 times as long as broad, acute at the base, glabrous ..... 4. *F. segoviae.*
        - Blades of the leaves not more than two and one-half times as long as broad, usually very obtuse or rounded at the base.
          - Lateral veins of the leaf blades 14 to 21 on each side, the surfaces glabrous ..... 5. *F. glabrata.*
          - Lateral veins usually 12 to 15 on each side, the surfaces usually very scabrous ..... 6. *F. mexicana.*
      - Leaf blades rounded or very obtuse at the apex or abruptly apiculate.
        - Stipules 1 to 1.5 cm. long; leaf blades scabrous, usually apiculate, the lateral veins 7 to 12 on each side ..... 7. *F. radula.*
        - Stipules 4 to 6 cm. long; leaf blades glabrous, very obtuse at the apex, not apiculate, the lateral veins 14 to 22 on each side ..... 8. *F. crassiuscula.*

Receptacles geminate; involucre bilobate[1]; stamen 1. (Subgenus UROSTIGMA.)
- Involucre very asymmetric, adherent to the receptacle over a large portion of its surface, the receptacle attached excentrically to the peduncle and its main axis thus parallel to that of the supporting branch. Receptacles 5 to 10 mm. in diameter; leaf blades glabrous.
  - Receptacles pedunculate ..... 9. *F. tecolutensis.*

[1] Very often the involucre appears to have more than 2 lobes, but th is is because the lobes are split by the expanding receptacle.

Receptacles sessile.
Leaf blades pointed at the apex, obtuse to acute or apiculate, oval to obovate, never obovate-oval or obovate-orbicular.
Blades of the leaves 5 to 10.5 cm. long, 2 to 4 cm. wide, the lateral veins scarcely prominent beneath, 8 to 12 on each side ..... 10. *F. eugeniaefolia.*
Blades of the leaves 8.5 to 17 cm. long, 4 to 9.5 cm. wide, the lateral veins prominent beneath, 7 to 9 on each side ..... 11. *F. tuerckheimii.*
Leaf blades broadly rounded at the apex, usually rounded-oval or obovate-orbicular.
Blades of the leaves deeply emarginate at the base, the lateral veins prominent beneath ..... 12. *F. isophlebia.*
Blades of the leaves not at all emarginate at the base, the lateral veins not elevated ..... 13. *F. jimenezii.*
Involucre symmetric, free from the receptacle or nearly so, the receptacle attached centrally to the peduncle or branch, its main axis thus forming an angle with that of the supporting branch.
Receptacles sessile or, in one species, some sessile and others pedunculate.
Leaf blades very large, 20 to 36 cm. long, pubescent beneath ..... 14. *F. intramarginalis.*
Leaf blades smaller, not over 16.5 cm. long and usually much smaller.
Receptacles partly sessile and partly pedunculate on the same plant. Leaf blades nearly as broad as long, glabrous or nearly so ..... 15. *F. cookii.*
Receptacles all sessile.
Leaf blades cuspidate at the apex, with a long acute acumen. Blades narrowly obovate-oblong, 9 to 16.5 cm. long, glabrous ..... 16. *F. panamensis.*
Leaf blades not cuspidate at the apex, sometimes apiculate or abruptly acuminate, but the acumen obtuse.
Receptacles 12 to 14 mm. in diameter or larger. Leaf blades oblong or elliptic-oblong, 10 to 14 cm. long ..... 17. *F. williamsii.*
Receptacles 5 to 12 mm. in diameter.
Leaf blades deeply cordate at the base, pubescent on both surfaces, broadly rounded at the apex ..... 18. *F. inamoena.*
Leaf blades subcordate to rounded at the base, glabrous on the upper surface or nearly so.
Receptacles 5 to 6.5 mm. in diameter; leaf blades abruptly acute or acuminate at the apex, with only 2 to 4 lateral veins on each side ..... 19. *F. colubrinae.*

Receptacles 6 to 12 mm. in diameter; leaf blades broadly rounded to obtuse at the apex, sometimes short-apiculate, with usually 5 to 7 veins on each side.
Stipules more or less persistent, 0.8 to 2.5 cm. long; leaf blades mostly obovate-oblong or obovate, glabrous. Receptacles glabrous..... 20. *F. costaricana.*
Stipules early deciduous; leaf blades not obovate-oblong, sometimes orbicular-obovate, usually conspicuously pubescent beneath.
Involucre small, about 5 mm. in greatest diameter, inconspicuous; receptacles glabrous..... 21. *F. kellermanii.*
Involucre large, conspicuous, inclosing the receptacle for half to two-thirds its length; receptacles finely pubescent or in age glabrate..... 22. *F. cotinifolia.*

Receptacles pedunculate.
Leaf blades conspicuously pubescent beneath.
Blades of the leaves suborbicular, as broad as long, deeply cordate at the base, with tufts of long white hairs along the costa beneath, otherwise glabrous.. 23. *F. petiolaris.*
Blades of the leaves usually conspicuously longer than broad, the pubescence of short hairs scattered over the lower surface.
Receptacles 8 to 9 mm. in diameter, minutely puberulent or glabrate; leaf blades 3 to 5 times as long as broad..... 24. *F. donnell-smithii.*
Receptacles 10 to 22 mm. in diameter, usually conspicuously pubescent; leaf blades less than two and one-half times as long as broad.
Stipules glabrous or nearly so; receptacles pyriform. Leaf blades cordate-ovate or ovate-deltoid.... 25. *F. palmeri.*
Stipules densely pilose-sericeous; receptacles globose.
Receptacles 10 to 13 mm. in diameter; leaf blades 4.5 to 12 cm. long, usually broadest at or near the base.
Involucres 10 to 15 mm. in greatest diameter; receptacles covered with fine appressed pubescence or glabrate; peduncles 2 to 4 mm. long..... 27. *F. pringlei.*
Involucres 4 to 6 mm. in greatest diameter; receptacles short-villous; peduncles 5 to 7 mm. long..... 28. *F. microchlamys.*
Receptacles 13 to 22 mm. in diameter; leaf blades 6 to 26 cm. long, broadest at or near the middle.
Pubescence fulvous or ferruginous; peduncles 2 to 3 mm. long; receptacles 15 to 22 mm. in diameter..... 29. *F. velutina.*
Pubescence grayish; peduncles 4 to 9 mm. long; receptacles 13 to 17 mm. in diameter. 30. *F. lapathifolia.*

Leaf blades glabrous beneath or nearly so.
Receptacles 4 to 12 mm. in diameter.
Leaf blades rounded or very obtuse at the apex, 4 to 5.5 cm. wide, emarginate at the base. Receptacles 6 to 8 mm. in diameter..... 31. *F. ovalis.*
Leaf blades acute or acuminate at the apex or conspicuously apiculate, or, if obtuse, less than 3 cm. wide and not emarginate at the base.
Receptacles with a deeply depressed ostiole, 9 to 12 mm. in diameter; leaf blades lanceolate to ovate or lance-oblong, 4 to 12 cm. long, 1.5 to 4.7 cm. wide..... 32. *F. padifolia.*
Receptacles with a plane or elevated ostiole; leaf blades obovate, oval, or elliptic-oval.
Leaf blades mostly obovate; receptacles 5 to 6 mm. in diameter; lateral veins of the leaf blades not prominent..... 33. *F. oerstediana.*
Leaf blades not obovate; receptacles 8 to 10 mm. in diameter; lateral veins of the leaf blades prominent.
Blades of the leaves more than twice as long as broad, mostly elliptic-oblong, emarginate or subcordate at the base..... 34. *F. hemsleyana.*
Blades of the leaves less than twice as long as broad, oval, rounded at the base..... 35. *F. lentiginosa.*
Receptacles 15 to 25 mm. in diameter.
Stipules ferruginous-sericeous. Leaf blades narrowly elliptic-oblong to obovate..... 36. *F. glycicarpa.*
Stipules glabrous or minutely puberulent.
Leaf blades cuneate-obovate, rounded at the apex. 37. *F. bonplandiana.*
Leaf blades oblong to oval or ovate-oval, broadest at or below the middle.
Blades of the leaves cordate or subcordate at the base, with 5 to 9 lateral veins on each side.
Petioles 3.5 to 7 cm. long; leaf blades bright green; receptacles pubescent..... 38. *F. jonesii.*
Petioles 1.5 to 3.5 cm. long; leaf blades glaucescent beneath; receptacles glabrous..... 26. *F. brandegei.*
Blades of the leaves rounded or emarginate at the base, with usually 8 to 13 lateral veins on each side.
Peduncles about 3 mm. long. Leaf blades oval, 16 to 21 cm. long, 7.5 to 10.5 cm. wide. 39. *F. pittieri.*
Peduncles 10 to 13 mm. long.
Leaf blades emarginate at the base; receptacles densely puberulent..... 40. *F. goldmanii.*
Leaf blades rounded at the base; receptacles glabrous or nearly so..... 41. *F. yucatanensis.*

DESCRIPTIONS OF SPECIES.

1. Ficus glaucescens (Liebm.) Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 300. 1867.

Pharmacosycea glaucescens Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 332. 1851.

Pharmacosycea hernandezii Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 332. 1851.

Pharmacosycea rigida Seem. Bot. Voy. Herald 195. 1854, not *Ficus rigida* Jack, 1822.

Urostigma protensum Griseb. Bonplandia **1858**: 4. 1858.

Pharmacosycea pseudoradula Miquel, Versl. Med. Kon. Akad. Amsterdam **13**: 414. 1862.

Ficus pseudoradula Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 299. 1867.

Ficus hernandezii Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 300. 1867.

Ficus coybana Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 300. 1867.

Ficus protensa Hemsl. Biol. Centr. Amer. Bot. **3**: 147. 1883.

Ficus guadalajarana S. Wats. Proc. Amer. Acad. **26**: 151. 1891.

Large or small tree; young branches brown, at first pilose or puberulent but the epidermis soon exfoliating, leaving them glabrous; stipules lance-triangular, 1 to 2 cm. long, long-attenuate, puberulent near the base or glabrate; petioles stout, 8 to 23 mm. long, densely pilose or puberulent at first but soon glabrous and ferruginous, subterete, shallowly canaliculate; leaf blades oval-oblong or obovate-oval, 8 to 23.5 cm. long, 4 to 11.5 cm. wide, obtuse or rounded at the base, sometimes subemarginate, 3 or 5-nerved, rounded or very obtuse at the apex or usually abruptly and obtusely apiculate, scaberulous or glabrate on the upper surface, beneath hirtellous or short-pilose, the lateral veins prominent beneath, 7 to 12 on each side, divaricate-ascending, nearly straight or arcuate, irregularly anastomosing near the margin, the veinlets loosely reticulate, not very conspicuous; peduncles solitary, 0.5 to 2 cm. long, stout, densely short-pilose; involucre very small, trilobate, the lobes rounded; receptacles subglobose, 1.5 to 2.5 cm. in diameter, densely short-pilose or hirtellous with white hairs.

TYPE LOCALITY: Mecapalco and Potrero de Consoquintla, Veracruz. Type collected by Liebmann.

SPECIMENS EXAMINED:

JALISCO: Barranca near Guadalajara, October, 1889, *Pringle* 2947 (G,[1] type of *F. guadalajarana*).

SINALOA: Foothills of the Sierra Madre near Plomosas, July, 1897, *Rose* 1767 (N).

OAXACA: Vicinity of Cuicatlán, alt. 540 to 750 meters, October, 1894, *Nelson* 1684 (N, G).

MICHOACÁN: Hacienda Coahuayula, February, 1901, *Emrick* 44 (F).

VERACRUZ: Valley of Córdoba, April, 1866, *Bourgeau* 2249 (G).

GUATEMALA: Río Ocosito, Department of Quezaltenango, alt. 100 meters, April, 1892, *J. D. Smith* 2602 (N, G).

NICARAGUA: Chinandega, on stream banks, January, 1903, *C. F. Baker* 583 (N).

PANAMA: Around Culebra, Canal Zone, alt. 50 to 150 meters, January, 1911, *Pittier* 2211 (N). Hospital grounds at Ancón, February, 1911, *Pittier* 2728 (N).

All the specimens cited above agree in having pubescent leaf blades and receptacles. They show a rather wide variation in leaf outline, but not more than may be expected within a species.

The type of *Pharmacosycea hernandezii* was collected at Papantla, Veracruz, by Liebmann. That of *P. rigida*, a homonym later replaced by *Ficus coybana*, was obtained by Seemann on the island of Coyba, off the Pacific coast of Panama. *Urostigma protensum* was based upon material collected in Panama by Duchassaing. The type of *Ficus guadalajarana* was from Guadalajara, Jalisco.

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[1] The letters in parentheses indicate the herbaria in which the specimens cited are found, as follows: N, United States National; G, Gray; F, Field Museum of Natural History; C, University of California.

2. Ficus radulina S. Wats. Proc. Amer. Acad. **26**: 151. 1891.

Large tree; branches yellowish, the younger ones very stout, densely piloseericeous with slender white hairs, the pubescence persistent, the epidermis tardily exfoliating; stipules nearly linear, 6 to 8 cm. long, attenuate, green, sericeous near the base, glabrous above; petioles stout or rather slender, 2 to 4.5 cm. long, sparsely hirtello-puberulent; leaf blades oblong, elliptic-oblong, or oval-elliptic, usually broadest at the middle but sometimes broadest slightly below the middle, 9 to 18 cm. long, 3.5 to 8 cm. wide, obtuse or rounded and 5-nerved at the base, not at all emarginate, gradually acute at the apex, pale green, coriaceous, scaberulous on both surfaces or finally glabrate; peduncles solitary, stout, 3 to 5 mm. long, at first puberulent but soon glabrate; involucre very small, trilobate, the lobes rounded; receptacles globose, 1.5 to 2 cm. in diameter, spotted with light and deep green, at first densely scabrous or scabro-puberulent, finally glabrate; ostiole prominent, conic, closed by several thin brown obtuse scales.

TYPE LOCALITY: Hacienda San Miguel, near Batopilas, southwestern Chihuahua. Type collected by Palmer in 1885 (no. L).

SPECIMENS EXAMINED:

CHIHUAHUA: Huerachic, April, 1893, *Hartman* 537 (N, G). Hacienda San Miguel, 1885, *Palmer* L (N, G, type).

SONORA: Alamos, around a dwelling in the town, March, 1910, *Rose, Standley & Russell* 12937 (N); December, 1898, *Goldman* 283 (N, G); March or April, 1890, *Palmer* 367 (N, G). Canyon in Sierra de Alamos, March, 1910, *Rose, Standley & Russell* 12992 (N).

The native names are given as "nacapuli," "higuera," and "salate." The fruit is edible.

The species is very well marked by the densely pubescent young branches.

3. Ficus tonduzii Standley, sp. nov.

A large tree; young branches very stout, gray or brownish gray, glabrous; stipules narrowly triangular, long-attenuate, 2 to 2.5 cm. long, deciduous, green, thick, glabrous; petioles very stout, 2 to 5 cm. long, subterete, sulcate, glabrous; leaf blades oval or obovate-oval, 12 to 24 cm. long, 6 to 12.5 cm. wide, rounded to broadly cuneate at the base, rounded or very obtuse at the apex and abruptly apiculate, the acumen broadly triangular and rounded at the apex, thick-coriaceous, glabrous on the upper surface, sublustrous, finely punctate, beneath scaberulous or in age glabrate, very prominently veined, the veins whitish beneath, the costa 2.5 to 4 mm. thick, the lateral veins very stout, about 10 on each side, divergent almost at right angles, nearly straight, anastomosing to form a coarse submarginal vein, the veinlets rather prominent, coarsely reticulate; receptacles subglobose, 2 to 2.5 cm. in diameter, scaberulous; ostiole closed by several suberect obtuse thin brown scales; bractlets very small, rounded; stamens 2.

Type in the U. S. National Herbarium, no. 678727, collected at La Gloria de Juan Viñas, Costa Rica, altitude 800 to 900 meters, June 4 or 5, 1911, by H. Pittier (no. 3665).

ADDITIONAL SPECIMENS EXAMINED:

COSTA RICA: Bois du Tremedal, près San Ramón, alt. 1,300 to 1,400 meters, April, 1913, *Tonduz* 17658 (N, F). Pâturages de Las Vueltas, alt. 635 meters, December, 1898, *Tonduz* 12869 (N). Guápiles, Llanuras de Santa Clara, alt. 200 meters, April, 1894, *J. D. Smith* 4935 (N, G).

COLOMBIA: Santa Marta, alt. 1,200 meters, *H. H. Smith* 1453 (N, G, F).

The species is a very distinct one, easily recognized among our other members of the subgenus Pharmacosyce by the very large, coriaceous leaves with coarse, heavy venation. All of the several receptacles of the Costa Rican specimens cited above are detached from the stems; consequently it is impossible to be certain whether they are sessile or pedunculate, but they are probably pedunculate.

In Captain Smith's no. 4935 the tips of the leaf blades are acute instead of rounded. In the Colombian specimens the blades are merely very obtuse and not at all apiculate. In the latter the receptacles have adherent to them a peduncle 12 mm. long. Both these collections, which are referred only tentatively to *F. tonduzii*, were distributed as *Ficus guianensis*, but, judging from descriptions, the latter species is far removed from the present plant.

The common name of the Costa Rican plant is given as "chilamate."

4. Ficus segoviae Miquel, Ann. Mus. Bot. Lugd. Bat. 3: 300. 1867.

Pharmacosycea angustifolia Liebm. Dansk. Vid. Selsk. Skrivt. V. 3: 333. 1851, not *Ficus angustifolia* Roxb. 1814.

Young branches brown, glabrous or obscurely puberulent; stipules very narrow, tapering gradually from the base to the long-attenuate apex, 2 to 5.5 cm. long, green, glabrous; petioles slender, 1.5 to 3.5 cm. long, glabrous, canaliculate; leaf blades elliptic, narrowly elliptic, or narrowly oblong-elliptic, 10 to 20 cm. long, 2.5 to 5.5 cm. wide, acutely cuneate at the base and 3-nerved, not at all emarginate, gradually acuminate or long-acuminate at the apex, subcoriaceous, pale green, sparsely scaberulous when young but soon glabrate, the lateral veins prominent beneath, slender, 14 to 20 on each side, divergent at an angle of 55 to 60 degrees, arcuate, laxly anastomosing near the margin, the veinlets not prominent; peduncles solitary, 4 to 5 mm. long, very stout, glabrate; involucre very small, reflexed; receptacles globose, 1.6 to 3 cm. in diameter, at first sparsely scaberulous but soon glabrate; ostiole prominent, the scales broad, rounded, brown; sepals dark ferruginous.

TYPE LOCALITY: Segovia, Nicaragua. Type collected by Örsted.

SPECIMENS EXAMINED:

GUERRERO: Cañón de la Mano Negra, near Iguala, August, 1905, *Rose, Painter & Rose* 9381 (N).

VERACRUZ: Zacuapan, March, 1909, *Purpus* 3784 (G, F, C).

GUATEMALA: Capetillo, Department of Zacatepéquez, alt. 1,400 meters, March, 1892, *J. D. Smith* 2604 (N, G).

The specimens cited and described agree perfectly with the original description, except for Liebmann's statement that the leaf blades are obtuse at the base. The species is doubtfully distinct from *Ficus glabrata*, but the leaf blades seem to be of characteristic outline.

5. Ficus glabrata H. B. K. Nov. Gen. & Sp. 2: 47. 1817.

?*Ficus anthelmintica* Mart. Syst. Mat. Med. Bras. 88. 1843, not *F. anthelmintica* Raeuschel, 1797.

A large tree, often 30 to 40 meters high; young branches stout, brown or pale yellowish brown, glabrous; stipules 5 to 6 mm. long, narrow, tapering gradually from the base to the long-attenuate apex, green, glabrous; leaf blades elliptic-oblong or elliptic-oval, broadest at the middle, 12 to 23 cm. long, 5 to 10 cm. wide, acute to very obtuse at the base and 5-nerved, not at all emarginate, rather abruptly narrowed to the acute or acuminate apex, subcoriaceous or sometimes almost herbaceous, pale green, glabrous, the lateral veins prominent beneath, divergent at an angle of 60 degrees or more, 14 to 21 on each side, approximate, parallel, slightly arcuate, laxly anastomosing near the margin, the veinlets nearly obsolete; peduncles solitary, 7 to 15 mm. long, stout, glabrous; involucre very small, irregularly lobed, the lobes obtuse; receptacles subglobose, 1.5 to 4 cm. in diameter, glabrous or very sparsely and obscurely scaberulous; ostiole prominent, about 1 mm. broad; sepals dark ferruginous.

TYPE LOCALITY: Near Bojorque and Teneriffe, along the Magdalena River, Colombia. Type collected by Bonpland.

SPECIMENS EXAMINED:

GUATEMALA: Gualán, Department of Zacapa, alt. 122 meters, December, 1905, *Kellerman* 5009 (N). Berberena, Department of Santa Rosa, alt. 1,000 meters, November, 1893, *Heyde & Lux* (J. D. Smith, no. 6235) (N, F, G). Casillas, Department of Santa Rosa, alt. 1,300 meters, May, 1893, *Heyde & Lux* (J. D. Smith, no. 4587) (N, G). Laguna Amatitlán, Department of Amatitlán, alt. 1,170 meters, March, 1890, *J. D. Smith* 1945 (N, G). Cubilquitz, March, 1913, *von Türckheim* 4081 (N).

HONDURAS: Shore of Tela River, near Puerto Sierra, January, 1903, *Wilson* 75 (N).

EL SALVADOR: Without definite locality, *Renson* 27 (N).

COSTA RICA: Taboga, January, 1913, *Jiménez* 789 (N).

PANAMA: Along Río Dupí, eastern Chiriquí, near sea level, December, 1911, *Pittier* 2539 (N). Along Río Fató, Province of Colón, alt. 10 to 100 meters, 1911, *Pittier* 3880 (N). Hospital grounds at Ancón, July, 1911, *Pittier* 3953 (N). Monte Lirio, Gatún River, Canal Zone, July, 1911, *Goldman* 1856 (N).

COLOMBIA: Santa Marta, alt. 660 meters, *H. H. Smith* 1457 (N, G, F), 2663 (N). San Martín de Loba, Department of Bolivar, 1916, *Curran* 6 (N).

Known in El Salvador as "amate de hijo grande."

There is little doubt that the specimens cited belong to Kunth's species. Whether that is the same as Martius's *Ficus anthelmintica* is not certain, in spite of the fact that Miquel considered them identical. At any rate, the specific name used by Martius is a homonym and not available.

Ficus anthelmintica was reported by Liebmann[1] from Veracruz. Whether the specimens so determined belong to *F. glabrata* can not be ascertained without an examination of his material.

6. Ficus mexicana Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 299. 1867.

Pharmacosycea mexicana Miquel, Versl. Med. Kon. Akad. Amsterdam **13**: 416. 1862.

Large tree; bark pale brownish or yellowish; young branches stout, brown or dull grayish brown, usually glabrous but sometimes sparsely puberulent, the epidermis very tardily if at all exfoliating; stipules nearly linear, 3.5 to 10 cm. long, attenuate, green, glabrous; petioles stout or slender, 1.2 to 3.5 cm. long, scaberulo-puberulent or glabrous, canaliculate; leaf blades oval, elliptic-oval, or elliptic-oblong, broadest at or slightly below the middle, 8 to 20 cm. long, 2.8 to 8 cm. wide, obtuse at the base and 3-nerved, not at all emarginate, gradually narrowed to the acute or subacuminate apex, subcoriaceous, glaucous green, scaberulous on both surfaces or finally glabrate, the lateral veins prominent beneath, 12 to 17 on each side, slender, divergent at an angle of about 70 degrees, parallel, nearly straight, laxly anastomosing near the margin, the veinlets very inconspicuous; peduncles solitary, 3 to 8 mm. long, glabrous or nearly so; involucre very small; receptacles sometimes conspicuously stipitate, globose, about 2 cm. in diameter, spotted, sparsely scaberulous when young but soon glabrate; ostiole prominent, very small, closed by broad, obtuse, dark brown scales; sepals ferruginous.

TYPE LOCALITY: Mexico. Type collected by Schiede.

SPECIMENS EXAMINED:

SAN LUIS POTOSÍ: River banks, Tamasopo, December, 1891, a tree 15 to 18 meters high, *Pringle* 5067 (G). River banks, Micos, a tree 18 to 21 meters high, July, 1891, *Pringle* 5108 (G). Rascón, June, 1905, *Palmer* 679 (F, C).

SINALOA: Villa Unión, April, 1910, *Rose, Standley & Russell* 13924 (N), 13905 (N). Guadalupe, April, 1910, *Rose, Standley & Russell* 14772 (N). Culiacán, April, 1910, *Rose, Standley & Russell* 14911 (N).

[1] Dansk. Vid. Selsk. Skrivt. V. **2**: 331. 1851.

TEPIC: Tres Marías Islands, May, 1897, *Maltby* (N). María Madre Island, May, 1897, *Nelson* 4261 (N, G). Acaponeta, on a dry hillside, April, 1910, *Rose, Standley & Russell* 14443 (N); June, 1897, *Rose* 3123 (N). San Juan, near Tepic, September, 1894, *Eisen* (N). Between Concepción and Acaponeta, July, 1897, *Rose* 1897 (N).

COLIMA: Colima, 1897, *Palmer* 79 (G). Plain of Colima, June, 1906, *Fernow* (G). Paso del Río, November, 1906, *Emrick* 211 (F).

JALISCO: Ixtapa, alt. 600 to 900 meters, April, 1897, *Nelson* 4138 (N).

GUERRERO: Near Iguala, by streams, alt. 900 meters, July, 1907, *Pringle* 13941 (N).

MICHOACÁN: Ostula, November, 1906, *Emrick* 107 (F).

OAXACA?: Roadside between Hacienda del Capricho, Guerrero, and Llano Grande, Oaxaca, alt. 60 to 90 meters, February, 1895, *Nelson* 2327 (N, G).

YUCATÁN: Aguada Calotyaxek, March, 1866, *Schott* 783 (F).

Those of the specimens cited which have ever been determined specifically were referred to *Ficus radula* and *F. radulina*. From the latter the present species is clearly distinct in its glabrous branches. *Ficus radula* is not known at present in Mexico except from Yucatán. *Ficus mexicana* differs from it in having gradually acute or acuminate leaf blades, but it may not be sufficiently distinct to rank as a species. Specimens reported as *Ficus radula* by Liebmann[1] from Punta de San Augustín, Oaxaca, and Hacienda de la Laguna, Veracruz, are probably *F. mexicana*.

Some variation is exhibited by the present series of specimens. In Rose's no. 1897, from Tepic, the leaf blades are very thick and are sometimes slightly lustrous on the upper surface, and the receptacles are long-stipitate. In Nelson's no. 4361, from María Madre Island, the stipules are longer than in any of the other specimens. The specimen collected by Eisen has very narrow blades.

Miquel's original specimens were without fruit, but his description of the vegetative characters agrees well with the present material. The grounds for his statement that the leaves of *F. mexicana* are narrower than those of *F. anthelmintica*, with which he compares it, are not easily understood, for judging from his own descriptions of both species the proportions of the leaf blades seem to be practically the same.

The present species is one of the strangler figs. It is very abundant on the coastal plain of Tepic and southern Sinaloa.

7. Ficus radula Willd. Sp. Pl. **4**: 1144. 1806.

Pharmacosycea radula Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 330. 1851.

Large or small tree; branches brownish gray, the young ones ferruginous, at first sparsely puberulent but soon glabrate; stipules lance-triangular, 10 to 15 mm. long, long-attenuate, minutely puberulent or glabrous; petioles stout, 0.6 to 2.8 cm. long, glabrous or nearly so, ferruginous or grayish, canaliculate; leaf blades oblong, obovate, obovate-oblong, or oval, usually broadest above the middle, 8 to 16.5 cm. long, 3.5 to 8 cm. wide, narrowed to the obtuse or acutish, 5-nerved, subemarginate base, rounded or very obtuse at the apex and usually abruptly short-acuminate, the acumen obtuse or acutish, thin-coriaceous, pale green, subscaberulous above, scaberulous beneath, the lateral veins very prominent, 7 to 12 on each side, divaricate-ascending, subarcuate, anastomosing to form a submarginal vein, the veinlets prominent, closely or laxly reticulate; peduncles solitary, about 5 mm. long, stout, scabrous; involucre very small, trilobate, the lobes broadly rounded; receptacles subglobose, 1.5 to 3 cm. in diameter scabrous; ostiole very small, closed by numerous brown scales.

TYPE LOCALITY: Forests of the Orinoco and Río Negro, Venezuela. Type collected by Bonpland.

[1] Dansk. Vid. Selsk. Skrivt. V. **2**: 331. 1851.

SPECIMENS EXAMINED:

YUCATÁN: Chichen Itzá, 1901, *Goldman* 552 (N, F). Puerto Morelos, in and along mangrove swamps, March, 1901, *Goldman* 614 (N, F).

COSTA RICA: Forests about Nicoya, January, 1900, *Tonduz* 13718 (N). Río Maravilla, Alajuela, alt. 925 meters, *Jiménez* 538 (N). Moin Hill, near Limón, June, 1898, *Pittier* 12403 (N). Taboga, January, 1913, *Jiménez* 798 (N).

PANAMA: Vicinity of Penonomé, 1908, *Williams* 251 (N). Chepo, Province of Panama, alt. 60 meters, October, 1911, *Pittier* 4757 (N).

COLOMBIA: Santa Marta, alt. 75 meters, *H. H. Smith* 1456 (N, G, F).

VENEZUELA: Bobures, November, 1914, *Jahn* 361 (N).

Warburg[1] reports the species also from Trinidad and Surinam.

The species of the subgenus Pharmacosyce are very closely related. The material at hand is not so ample as might be desired, and the writer suspects that, with a larger series of specimens, some of the species here recognized will have to be reduced to synonymy. The amount of pubescence on the leaf blades, which has been depended upon for separating the species, is not improbably an unreliable character.

8. Ficus crassiuscula Warb. sp. nov. in herb.

Large tree with rounded crown; young branches stout, brown, glabrous or minutely puberulent; stipules linear-oblong, 4 to 6 cm. long, 6 mm. wide at the base, long-acuminate, green or dark brown, coriaceous, glabrous, or puberulent near the base; petioles 2.5 to 4 cm. long, stout, glabrous; leaf blades oblong-obovate, broadly obovate-elliptic, or oval, 10.5 to 23 cm. long, 5 to 11 cm. wide. obtuse or rounded at the base, rounded at the apex or very obtuse, coriaceous, glabrous, often lustrous on the upper surface, the costa stout, the lateral veins conspicuous beneath, 14 to 22 on each side, divergent at an angle of 60 to 85 degrees, arcuately anastomosing near the margin, the veinlets inconspicuous; peduncles solitary, 2 cm. long, stout, glabrous; involucre small, trilobate, the lobes rounded, glabrous; receptacles obovoid-globose, 2 cm. in diameter, glabrous or nearly so, rose-colored at maturity; ostiole prominent; sepals dark ferruginous.

Type in the U. S. National Herbarium, no. 472427, collected at La Fortuna, Volcán de Irazú, Costa Rica, altitude 1,575 meters, July, 1901, by H. Pittier (no. 16150).

ADDITIONAL SPECIMENS EXAMINED:

COSTA RICA: Carrillo, January, 1908, *Tonduz* 17435 (N). Santo Domingo de Golfo Dulce, March, 1896, *Tonduz* 9887 (N).

PANAMA: Ancón, Canal Zone, November, 1913, *Mell* (N).

Native name in Costa Rica given as "chilamate."

Material of the type collection was sent by Mr. Pittier several years ago to Warburg, who assigned to it the name here published. *Ficus crassiuscula* is closely related to *F. radula*, but is distinguished by the long stipules and large, glabrous leaf blades, these not apiculate at the apex and with more numerous lateral veins.

9. Ficus tecolutensis (Liebm.) Miquel, Ann. Mus. Bot. Lugd. Bat. 3: 299. 1867.

Urostigma tecolutense Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 324. 1851.

Young branches fulvous, glabrous; stipules 1 to 1.5 cm. long, long-acuminate, dark brown, glabrous, deciduous; petioles stout, 1 to 1.5 cm. long, glabrous; leaf blades oblong, elliptic-oblong, or oblong-oval, sometimes somewhat obovate, 6 to 10.5 cm. long, 2 to 4 cm. wide, obtuse at the base and sometimes somewhat submarginate, 5-nerved, obtuse or acutish at the apex, subcoriaceous, concolorous, glabrous, the costa stout, prominent beneath, the lateral veins very slender, scarcely prominent, 7 to 9 on each side, divergent at an angle of 50 to 60 degrees, laxly anastomosing near the margin; peduncles geminate, short, stout; receptacles attached laterally near the base, depressed-globose, 5 to 8 mm. in diameter, glabrous, the ostiole depressed, 2.5 mm. broad, closed by 3 thin brown scales; involucre bilobate, inconspicuous, 5 to 6 mm. long, partly attached to the receptacle, the lobes rounded, brown, minutely puberulent or glabrate outside.

[1] In Urban, Symb. Antill. 3: 484. 1903.

TYPE LOCALITY: Tecoluta, Veracruz. Type collected by Liebmann.

SPECIMENS EXAMINED:

VERACRUZ: Tecoluta, *Liebmann* (G, type collection).

YUCATÁN: Buena Vista, 1899, *Gaumer* (F).

GUATEMALA: Alotenango, Department of Zacatepéquez, alt. 1,500 meters, March, 1892, *J. D. Smith* 2605 (N, G).

The Yucatán specimen has only immature receptacles, hence the determination is doubtful.

10. Ficus eugeniaefolia (Liebm.) Hemsl. Biol. Centr. Amer. Bot. **3**: 144. 1883.

Urostigma eugeniaefolium Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 329. 1851.

Young branches fuscous, glabrous; stipules 1 to 2.5 cm. long, long-acuminate, firm, dark brown, grayish-puberulent outside or glabrate; petioles rather slender, 1.5 to 3 cm. long, glabrous; leaf blades obovate, broadly obovate, or elliptic-obovate, 5 to 10.5 cm. long, 2 to 4 cm. wide, narrowed to the obtuse 5-nerved base, obtuse, acute, or rounded at the apex, sometimes obscurely apiculate, subcoriaceous, glabrous, the costa coarse and prominent, the lateral veins slender, slightly prominent beneath, 8 to 12 on each side, divergent at an angle of 60 to 90 degrees, parallel, arcuately anastomosing near the margin; receptacles sessile, geminate, globose or depressed, about 1 cm. in diameter, glabrous, attached laterally near the base, the ostiole slightly prominent, closed by 2 valvate scales; involucre bilobate, united with the base of the receptacle, the free portion of the lobes broadly rounded, thin, glabrous, at first completely inclosing the receptacle but at maturity about two-thirds as long.

TYPE LOCALITY: Ujaras, Costa Rica. Type collected by Liebmann.

SPECIMENS EXAMINED:

EL SALVADOR: Without definite locality, *Renson* 96 (N).

Renson's collection, upon which the above description is based, agrees well with Liebmann's description, except in the length of the petioles, which is given as 4 to 8 mm. Liebmann gives the vernacular name in Costa Rica as "soto de caballo."

11. Ficus tuerckheimii Standley, sp. nov.

Large tree with branching trunk and elongate crown; young branches brownish, glabrous; stipules deciduous, 1.5 to 4.5 cm. long, narrow, long-acuminate, glabrous, or minutely puberulent outside; petioles 1.5 to 5.5 cm. long, stout, glabrous; leaf blades oval or oval-oblong, 8.5 to 17 cm. long, 4 to 9.5 cm. wide, obtuse or rounded at the base or rarely acute, not at all emarginate, 5 or 7-nerved, obtuse or rounded at the apex and short-apiculate, with a broad obtuse acumen, coriaceous, glabrous, green above, slightly paler beneath, the costa coarse and very prominent, the lateral veins slightly prominent beneath but slender, 7 to 9 on each side, divergent at an angle of 45 to 50 degrees, nearly straight, laxly anastomosing near the margin; receptacles geminate, sessile, attached laterally near the base, depressed-globose, 8 to 10 mm. in diameter, often more or less compressed laterally, glabrous or sparsely puberulent, the ostiole not prominent, closed by 2 dark brown valvate scales; involucre bilobate, united with the base of the receptacle, the free portion of the lobes broadly rounded, minutely puberulent or glabrate, at maturity about two-thirds the length of the receptacle, at anthesis equaling and closely inclosing the receptacle.

Type in the U. S. National Herbarium, no. 472426, collected at La Fortuna, Volcán de Irazú, Costa Rica, altitude 1,575 meters, July, 1901, by H. Pittier (no. 16149).

ADDITIONAL SPECIMENS EXAMINED:

GUATEMALA: Cobán, alt. 1,350 meters, December, 1907, *von Türckheim* II. 2092 (N).

COSTA RICA: Río Turrialba, Province of Cartago, alt. 500 meters, March, 1894, *J. D. Smith* 4937 (N, G).

Ficus tuerckheimii is closely related to *F. jimenezii*, but differs in the larger, proportionally narrower, pointed leaf blades with more prominent venation.

12. Ficus isophlebia Standley, sp. nov.

Tree of medium size; young branches fulvous or brownish, glabrous; stipules 2 to 4 cm. long, narrow, long-acuminate, firm, brown, glabrous; petioles stout, 3 to 4 cm. long, glabrous; leaf blades broadly obovate-oval or orbicular-obovate, 7 to 9.5 cm. long, 5 to 7 cm. wide, rounded and deeply emarginate at the 5-nerved base, broadly rounded at the apex, subcoriaceous, glabrous, bright green, concolorous, the costa prominent beneath, the lateral veins evident but scarcely elevated, 6 to 8 on each side, divergent at an angle of 50 to 60 degrees, nearly straight, arcuately anastomosing near the margin; receptacles geminate, sessile, attached laterally near the base, subglobose, more or less laterally compressed, about 9 mm. in diameter, puberulent or glabrate, the ostiole prominent, closed by 3 dark brown scales; involucre covering and attached to the lower third of the receptacle, the free portion bilobate, the lobes very thin, rounded, glabrous or sparsely puberulent.

Type in the U. S. National Herbarium, no. 676949, collected in the vicinity of David, Chiriquí, Panama, altitude 30 to 80 meters, February 25, 1911, by H. Pittier (no. 2821).

A specimen from Charco, Costa Rica, *Jiménez* 1001, is referred here doubtfully.

Ficus isophlebia is related to *F. jimenezii* but differs in having the leaf blades deeply emarginate at the base and more conspicuously veined. The receptacles have an excentric point of attachment as in that species, but the point is basal rather than lateral. The few receptacles present on the type specimen, moreover, are not at all depressed.

13. Ficus jimenezii Standley, sp. nov.

Young branches grayish or fulvous, glabrous; stipules 1 to 1.5 cm. long, broad, acuminate, dark brown, grayish-puberulent outside, deciduous; petioles stout, 1.7 to 3 cm. long, glabrous; leaf blades obovate-oval, oval, or oblong-obovate, 4.5 to 11 cm. long, 3.5 to 6 cm. wide, rounded or very obtuse at the base, not at all emarginate, broadly rounded at the apex, coriaceous, dull green, concolorous, glabrous, the costa coarse and slightly prominent beneath, the lateral veins very slender, immersed, 6 to 9 on each side, divergent at an angle of 55 to 80 degrees, arcuately anastomosing near the margin; receptacles geminate, sessile, attached laterally, depressed-globose, 5 to 8 mm. in diameter, glabrous or minutely puberulent, the ostiole prominent; involucre bilobate, the lobes broadly rounded, thin, minutely puberulent outside or glabrate.

Type in the U. S. National Herbarium, no. 861424, collected in the vicinity of San José, Costa Rica, November, 1910, by A. Tonduz and Otón Jiménez (no. 17536).

ADDITIONAL SPECIMENS EXAMINED:

COSTA RICA: Vicinity of San José, November, 1910, *Tonduz & Jiménez* 17537 (N), 17544 (N). Without locality, November, 1910, *Herb. Nac. Costa Rica* 17547 (N). San Francisco de Guadalupe, October, 1910, *Jiménez* 15 (N).

Ficus jimenezii is not very closely related to any Central American species heretofore published. It is remarkable for the strongly excentric attachment of the receptacles, these, although decidedly depressed, being so attached that their axis is parallel to that of the branch. The involucre is bilobate, but instead of being free from the receptacle, as in most species, it is firmly attached to it over a large portion of its surface.

14. Ficus intramarginalis (Liebm.) Miquel, Ann. Mus. Bot. Lugd. Bat. 3: 297. 1867.

Urostigma intramarginale Liebm. Dansk. Vid. Se sk. Skrivt. V. 2: 328. 1851.

Large tree; young branches stout, trigonous, rugose, glabrous; leaves approximate, the petioles subcompressed, 5 to 6 cm. long, striate, pubescent; stipules 5 cm. long, elongate, puberulent; leaf blades ovate or elongate-ovate, 20 to 30 cm. long, 14 to 18 cm. wide, subcordate at the base and 7-nerved, subobtuse at the apex, bright green, lustrous and glabrous on the upper surface, beneath fulvous green, pubescent, fulvous-

lanate along the nerves, becoming glabrate, the lateral veins prominent beneath, 14 on each side, parallel, arcuately anastomosing near the margin, the veinlets reticulate; receptacles sessile, depressed-globose, 12 mm. long, 24 mm. broad, subpilose, finally glabrate; ostiole closed by 2 rufous-pilose scales; involucre bilobate, the lobes ovate, obtuse, fulvous-pilose.

TYPE LOCALITY: Turrialba, Costa Rica. Type collected by Örsted.

There is probably to be referred here a specimen collected near Cachí, Reventazón Valley, Costa Rica, at an altitude of 1,000 meters, March, 1902, by Brade (no. 16349). This locality is in the same region as Turrialba. Unfortunately, the specimen consists only of leaf blades, but these agree well with Liebmann's diagnosis except that they are even larger than in his specimens.

Ficus intramarginalis has the largest leaves of all the North American species. The blades of Brade's collection are 33 and 36 cm. long and 21 and 25 cm. wide, acutish at the apex, and with 13 or 14 lateral veins on each side.

15. Ficus cookii Standley, sp. nov.

Branches very stout, gray or brown, the young ones minutely puberulent or glabrate; stipules deciduous, 10 to 16 mm. long, broad, brown, obscurely puberulent or glabrous; petioles stout, 2.5 to 7.5 cm. long, glabrous; leaf blades broadly oval to rounded-oval or orbicular-ovate, 6 to 11 cm. long, 4.4 to 8.5 cm. wide, shallowly cordate at the base and 5 or 7-nerved, broadly rounded at the apex and sometimes very shortly apiculate, coriaceous, green above, slightly paler beneath, glabrous or when young slightly puberulent beneath, the lateral veins 8 to 10 on each side, coarse, divergent at an angle of 65 to 85 degrees, nearly straight, arcuately anastomosing near the margin; receptacles geminate, subglobose, about 1 cm. in diameter, red or pinkish, glabrous, the ostiole slightly elevated, closed by 3 broad thick bracts; involucre about two-thirds as long as the receptacle and closely investing it, bilobate, the lobes broadly rounded, brown, rigid, finely puberulent outside; receptacles partly sessile and partly pedunculate, the stout peduncles equaling or shorter than the receptacles.

Type in the U. S. National Herbarium, no. 860257, collected at San Vicente, Chiapas, Mexico, June 5, 1906, by O. F. Cook (no. 73).

ADDITIONAL SPECIMENS EXAMINED:

CHIAPAS: San Vicente, June, 1906, *Cook* 74 (N); April, 1904, *Goldman* 891 (N). Soyotitán, March, 1904, *Goldman* 781 (N). Comitán, April, 1904, *Goldman* 832 (N); June, 1906, *Cook* 108 (N).

GUATEMALA: San Andrés, Huehuetenango, May, 1906, *Cook* 52 (N).

Ficus cookii differs from all the other species of Mexico and Central America in having both sessile and pedunculate receptacles. In some respects it answers to the description of *F. calyculata* Mill., but the diagnosis of that species is too incomplete to admit of a reliable identification. Moreover, Miller's statement that the fruit of his plant was "the size of a middling nutmeg" seems to indicate some species with larger receptacles.

16. Ficus panamensis Standley, sp. nov.

Young branches brownish, puberulent or glabrous; stipules about 2 cm. long, deciduous, narrow, grayish-puberulent outside; petioles rather slender, 1 to 3.5 cm. long, minutely puberulent or glabrate; leaf blades narrowly obovate-oblong or sometimes oblong, 9 to 16.5 cm. long, 4 to 5.5 cm. wide, obtuse or rounded and emarginate at the base, rounded and abruptly cuspidate at the apex, the narrow acumen 8 to 12 mm. long, obtuse or acute, green on both surfaces, sublustrous on the upper surface, thin, glabrous; receptacles geminate, sessile, subglobose, about 1 cm. in diameter, slightly longer than broad, glabrous, the ostiole prominent, closed by 2 large and one very small bract, these suberect, the receptacle thus mamillate at the apex; involucre bilobate, about 6 mm. long, the lobes rounded, minutely puberulent, spreading.

Type in the U. S. National Herbarium, no. 678988, collected along the Río Fató, Province of Colón, Panama, altitude 10 to 100 meters, epiphytic upon a tall Sloanea, July or August, 1911, by H. Pittier (no. 3908).

ADDITIONAL SPECIMENS EXAMINED:

TABASCO: Near Atasta, December, 1889, *Rovirosa* 682 (N).

HONDURAS: Along bank of Highland Creek, Puerto Sierra, January, 1903, *Wilson* 44 (N).

PANAMA: Río Fató, Province of Colón, 1911, *Pittier* 3893 (N).

COLOMBIA: Santa Marta, *H. H. Smith* 2106 (N, G, F).

Ficus panamensis is similar in most characters to *F. hemsleyana* (see p. 29), but is distinguished by its sessile or nearly sessile receptacles. The leaf blades, too, are narrower and have a longer, narrower acumen.

17. Ficus williamsii Standley, sp. nov.

Small tree; branches grayish, the young ones stout, puberulent, becoming glabrate; stipules triangular-oblong, 13 mm. long, thin, dark brown, strigose outside with stiff fulvous hairs; petioles stout, 1.5 to 2 cm. long, pruinose; leaf blades oblong or elliptic-oblong, 10 to 14 cm. long, 5.3 to 6.3 cm. wide, slightly narrowed toward both ends, obtuse at the base, subemarginate and 3-nerved, obtuse at the apex and acutely short-apiculate, coriaceous, glabrous, lustrous on the upper surface, the lateral veins prominent beneath, 9 or 10 on each side, distant, divergent at an angle of 60 degrees, straight, laxly and arcuately anastomosing near the margin, the veinlets obscure; receptacles geminate, sessile, subglobose (very immature in specimen), 12 to 14 mm. in diameter, densely and minutely grayish-puberulent, the ostiole not prominent, triangular, 2.5 mm. broad; involucre bilobate, 11 mm. broad, the lobes rounded, thin, brown, pruinose-puberulent; sepals ferruginous.

Type in the U. S. National Herbarium, no. 678105, collected in the vicinity of Penonomé, Panama, February or March, 1908, by R. S. Williams (no. 404).

In leaf texture this resembles *Ficus goldmanii*, but that has proportionally narrower leaves and different receptacles, which are borne on long peduncles.

18. Ficus inamoena Standley, sp. nov.

Older branches brownish gray, the young ones pale brownish, hirtellous with whitish hairs; stipules broadly triangular, 5 to 7 mm. long, acute, ferruginous, puberulent and sparsely strigose on the outer surface; petioles stout, 8 to 15 mm. long, hirtellous, deeply canaliculate; leaf blades rounded-oval, broadest slightly above the middle, 6 to 9 cm. long, 4.5 to 6.5 cm. wide, deeply cordate at the base, the sinus very narrow or the lobes slightly overlapping, broadly rounded at the apex and sometimes subemarginate, coriaceous, grayish green, short-hirtellous on both surfaces and velvety to the touch, the lateral veins prominent on both surfaces, 5 or 6 on each side, distant, divergent-ascending, slightly arcuate, laxly anastomosing near the margin, the costa anastomosing below the apex with the lateral veins, the veinlets very conspicuous, coarsely reticulate; receptacles geminate, sessile, depressed-globose, 10 to 11 mm. broad, glabrous, the ostiole not elevated, 2 mm. broad, closed by 2 truncate scales; involucre bilobate, the lobes rounded, pilose-strigose; sepals ferruginous.

Type in the U. S. National Herbarium, no. 860244, collected at Joyabaj (El Quiché), Guatemala, May 11, 1906, by O. F. Cook (no. 22).

Related to *Ficus cotinifolia*, but amply distinct in the deeply cordate leaf blades and small involucres. From *F. kellermanii* it is distinguished by the deeply cordate, broader, more pubescent leaf blades.

19. Ficus colubrinae Standley, sp. nov.

Older branches grayish or light brown, the young ones stout or often slender, densely pilose-strigose with long sordid hairs, tardily glabrate; stipules narrowly triangular, 5 to 8 mm. long, long-acuminate, densely pilose-strigose outside, or glabrate above, thin, ferruginous; petioles stout, 8 to 24 mm. long, densely pilose-strigose; leaf blades

oval, obovate-oval, or oval-oblong, 4.5 to 9.5 cm. long, 2.2 to 5.2 cm. wide, rounded or very obtuse at the base, usually 5-nerved, sometimes subemarginate, rounded or very obtuse at the apex and very abruptly contracted into a triangular, obtuse or acutish acumen 1 cm. long or shorter, subcoriaceous, deep green, concolorous, finely punctate on the upper surface, pilose-strigose along the veins beneath, elsewhere obscurely puberulent, glabrate in age, the lateral veins prominent beneath, 2 or 3 or rarely 4 on each side, strongly ascending, arcuate, laxly anastomosing near the margin, the veinlets inconspicuous; receptacles geminate, sessile, subglobose, 5 to 6.5 mm. in diameter, glabrous, green streaked with red, the ostiole not prominent, closed by 3 very broad obtuse scales; involucre very small, bilobate, the lobes rounded, pilose at the base with rigid hairs; sepals blackish brown.

Type in the U. S. National Herbarium, no. 860679, collected at Cubilquitz, Department of Alta Verapaz, Guatemala, altitude 350 meters, July, 1907, by H. von Türckheim (no. II. 156; distributed as *Ficus sapida*).

ADDITIONAL SPECIMENS EXAMINED:

GUATEMALA: Near the Finca Sepacuité, Department of Alta Verapaz, March, 1902, *Cook & Griggs* 26 (N). Cubilquitz, alt. 350 meters, 1900, *von Türckheim* (J. D. Smith, no. 7668; distributed as *F. hartwegii*) (N, G).

COSTA RICA: In pasture bordering road, Buena Vista, road to San Carlos Valley. alt. 600 meters, April, 1903, *Cook & Doyle* 116 (N). Santa Clara, September, 1896, *Cooper* 10242 (N). Forêts de Las Vueltas, Tucurrique, alt. 635 to 700 meters, March, 1899, *Tonduz* 13284 (N).

Known in Guatemala as "mato palo."

This species has been confused with *Ficus hartwegii* Miquel, a Colombian plant, to which it appears to be related, but which differs in having pubescent receptacles, more numerous lateral veins, and a different kind of pubescence on the branches and leaves. The leaves suggest those of some species of the genus Colubrina, hence the specific name.

20. Ficus costaricana (Liebm.) Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 298. 1867.

Urostigma costaricanum Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 322. 1851.

?*Urostigma warzewiczii* Miquel, Versl. Med. Kon. Akad. Amsterdam **13**: 410. 1862,

?*Ficus warczewiczii* Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 298. 1867.

Tree of large or medium size; young branches stout, grayish or brownish, glabrous or sometimes hirsute when young; stipules 0.8 to 2.5 cm. long, persistent or finally deciduous, broad, brown, thin, the outer ones densely silky-strigose outside; petioles stout, 1 to 3.5 cm. long, glabrous; leaf blades narrowly obovate-oblong, or sometimes obovate, oblong, or elliptic-oblong, 6 to 15.5 cm. long, 2.5 to 6.5 cm. wide, rounded and emarginate or subcordate at the base and usually 5-nerved, rounded or obtuse at the apex or rarely acutish or obtusely short-apiculate, glabrous, coriaceous, concolorous or nearly so, the lateral veins very coarse and prominent beneath, 5 to 7 on each side, divergent at an angle of about 60 degrees, arcuate, laxly anastomosing near the margin; receptacles geminate, sessile, depressed-globose, 10 to 12 mm. in diameter, glabrous, the ostiole not prominent, closed by 2 bracts; involucre bilobate, about 1 cm. long, the lobes rounded, strigose outside.

TYPE LOCALITY: Pitayaya, Costa Rica. Type collected by Örsted.

SPECIMENS EXAMINED:

GUATEMALA: Santa Rosa, Department of Santa Rosa, alt. 1,000 meters, May, 1892, *Heyde & Lux* (J. D. Smith, no. 2983; distributed as *F. lapathifolia*) (N).

COSTA RICA: Río Torres, November, 1910, *Herb. Nac. Costa Rica* 17510 (N), 17549 (N); November, 1910, *Tonduz & Jiménez* 17535 (N). Without locality, *Herb. Nac. Costa Rica* 17548 (N); in 1888, *Biolley* 997 (N). San José, November, 1910, *Tonduz & Jiménez* 17540 (N); June, 1911, *Pittier* 3673 (N), 3675 (N); November, 1901, *Pittier* 16218 (N); May, 1890, *Pittier* 2516 (N). San Gabriel,

November, 1910, *Herb. Nac. Costa Rica* 17546; October, 1910, along roadside, *Jiménez* 14 (N). Nuestro Amo, Llanos de Turúcares, alt. 750 meters, June, 1902, *Pittier* 16394 (N); July, 1912, *Jiménez* 515 (N). Río Maravilla, Alajuela, alt. 925 meters, February, 1910, *Jiménez* 537 (N), 539 (N), 540 (N). Alajuela, alt. 900 meters, February, 1911, *Jiménez* 987 (N). Bords du Río Torres à San Francisco de Guadalupe, alt. 1,200 meters, August, 1897, *Tonduz* 11298 (N).

PANAMA: David, Chiriquí, alt. 30 to 80 meters, February, 1911, *Pittier* 2826 (N), 2835 (N). Caldera, Chiriquí, alt. 200 to 300 meters, March, 1911, *Pittier* 3348 (N).

The vernacular name in Costa Rica is given as "higuerón" and "higuerón colorado," the latter referring, presumably, to a red fruit. The receptacles of the Panama tree are said to be yellow.

21. Ficus kellermanii Standley, sp. nov.

Young branches grayish or yellowish brown, at first sparsely pilose but soon glabrate; stipules 1 to 2 cm. long, broad, thin, brown, puberulent outside or glabrous, deciduous; petioles 1.5 to 3 cm. long, stout, glabrous; leaf blades oval-oblong, obovate-oval, or oval, 5 to 14 cm. long, 3 to 8 cm. wide, rounded and usually emarginate or subcordate at the base, 5-nerved, rounded at the apex, coriaceous, concolorous, usually lustrous on the upper surface and glabrous or nearly so, beneath short-hirtellous, especially along the veins, or glabrate, the veins prominent beneath, the lateral ones 4 to 7 on each side, divergent at an angle of 45 to 55 degrees, straight or slightly arcuate, arcuately anastomosing near the margin; receptacles geminate, sessile, globose, 8 to 10 mm. in diameter, glabrous, the ostiole small, rather prominent, closed by 2 dark brown scales; involucre bilobate, about 5 mm. long, inconspicuous, the lobes rounded, sparsely sericeous or glabrate.

Type in the U. S. National Herbarium, no. 578685, collected at El Rancho, Department of Jalapa, Guatemala, January 6, 1906, by W. A. Kellerman (no. 5595).

ADDITIONAL SPECIMENS EXAMINED:

GUATEMALA: El Rancho, April, 1902, *Cook* 812 (N). Sanarate, Department of Guatemala, January, 1906, *Kellerman* 5902 (N). Casillas, Department of Santa Rosa, alt. 1,300 meters, May, 1893, *Heyde & Lux* (J. D. Smith, no. 4588) (N, G). Santa Rosa, alt. 1,000 meters, May, 1892, *Heyde & Lux* (J. D. Smith, no. 2983) (G). Lake Amatitlán, alt. 1,200 meters, January, 1906, *Kellerman* 5059 (N).

The native name is given by Cook as "capulín amate."

The Heyde and Lux collections were distributed as *Ficus lapathifolia* and *F. hartwegii*. The former species has much larger, pedunculate receptacles. *Ficus hartwegii* is a very different plant, native to Colombia.

Ficus kellermanii is most closely related to *F. cotinifolia*, but that species has dull leaf blades and conspicuous involucres half as long as the receptacles or even longer.

22. Ficus cotinifolia H. B. K. Nov. Gen. & Sp. **2**: 49. 1817.

Ficus myxaefolia Kunth & Bouché, Ind. Sem. Hort. Berol. 18. 1846.

Urostigma cotinifolium Miquel, Lond. Journ. Bot. **6**: 530. 1847.

Urostigma longipes Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 321. 1851.

Urostigma glaucum Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 322. 1851.

Urostigma myxaefolium Miquel, Versl. Med. Kon. Akad. Amsterdam **13**: 410. 1862.

Ficus longipes Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 297. 1867, not *F. longipes* Griffith, 1854.

Ficus glauca Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 299. 1867, not *F. glauca* DuM. de Cours. 1811.

Ficus subrotundifolia Greenm. Proc. Amer. Acad. **41**: 237. 1905.

Large or small tree with gray bark; young branches brownish, tomentulose, especially about the nodes, glabrate in age; stipules ovate-triangular, 5 to 13 mm. long,

acute, densely sericeous outside with white or yellowish hairs, thin, dark brown; petioles slender or stout, 1 to 6 cm. long, tomentulose when young but soon glabrate, canaliculate; leaf blades oblong, oval, obovate-oval, rounded-oblong, or suborbicular, usually broadest slightly above the middle, 5 to 13 cm. long, 2.2 to 10 cm. wide, rounded at the base or subcordate, 5-nerved, broadly rounded at the apex and sometimes submarginate, rarely acutish, coriaceous or subcoriaceous, pale or deep green, glabrous or tomentulose on the upper surface, densely tomentulose or short-villous beneath or sometimes only sparsely pilose, often nearly glabrous in age, the lateral veins prominent beneath, 5 to 7 on each side, distant, nearly straight or sometimes slightly tortuous, ascending at an angle of about 45 degrees, laxly anastomosing near the margin, the veinlets very conspicuous, coarsely reticulate; receptacles geminate, sessile, globose or slightly depressed, 6 to 11 mm. in diameter, spotted, finely and densely sericeous or in age glabrate, the ostiole not prominent, 2 mm. broad, closed by 2 truncate brown scales; involucre bilobate, half as long as the receptacle, the lobes rounded to acutish, densely and finely white-sericeous on both surfaces; sepals ferruginous.

TYPE LOCALITY: On the Acapulco road near La Venta del Egido, Mexico. Type collected by Bonpland.

SPECIMENS EXAMINED:

CHIHUAHUA: Hacienda San Miguel, 1885, *Palmer* I (N, G).

SONORA: Alamos, January, 1899, *Goldman* 287 (N, G). Sierra de Alamos, near the summit, March, 1910, *Rose, Standley & Russell* 12875 (N).

LOWER CALIFORNIA: Miraflores, alt. 300 meters, October, 1894, *Eisen* (N).

SINALOA: Near Colomas, July, 1897, *Rose* 1704 (N), 1770 (N). Culiacán, September 13, 1904, *Brandegee* (C).

JALISCO: Near Guadalajara, September, 1891, *Pringle* 3887 (N, G, F); September, 1903, *Rose & Painter* 7365 (N), *Pringle* 11850 (G, N).

TEPIC: Acaponeta, April, 1910, *Rose, Standley & Russell* 14442 (N). María Madre Island, May, 1897, *Nelson* 4182 (N), *Maltby* 78 (N).

SAN LUIS POTOSÍ: Near Los Canos, September, 1902, *Palmer* 227 (N, G, F).

TAMAULIPAS: Vicinity of Tampico, alt. 15 meters, 1910, *Palmer* 199 (N). Vicinity of Victoria, alt. 320 meters, 1907, *Palmer* 28 (N, G, C).

VERACRUZ: Colipa, *Liebmann* (G, type collection of *Urostigma longipes*).

COLIMA: Manzanillo, March, 1891, *Palmer* 1387 (N, G). Socorro Island, 1903, *Barkelew* 178 (N, G, C); in 1897, *Anthony* 395 (N, G, C).

PUEBLA: Near Tehuacán, 1911, *Purpus* 5729 (C); in 1905, *Rose, Painter & Rose* 9880 (N), 9881 (N), 9879 (N); December, 1895, *Pringle* 7041 (N, G); May, 1908, *Brandegee* 3386 (C). Between Huajuapám, Oaxaca, and Retlatzingo, Puebla, alt. 1,440 to 1,950 meters, November, 1894, *Nelson* 1993 (N, G). Tochimilco, August, 1893, *Nelson* (N).

MORELOS: Near Cuernavaca, May, 1899, *Rose & Hough* 4355 (N); June, 1904, *Pringle* 8931 (N, G, type of *F. subrotundifolia*, F).

OAXACA: Valley about Cuicatlán, alt. 540 meters, November, 1894, *Nelson* 1860 (N, G). Mitla, September, 1906, *Rose & Rose* 11316 (N).

YUCATÁN: Without locality, *Gaumer* 599 (N, G, F). Izamal, February, 1906, *Greenman* 423 (N, G, F). Chichen Itzá, 1901, *Goldman* 553 (N, F); February, 1899, *Millspaugh* 1630 (F). Hacienda San Rafael, August, 1865, *Schott* 846 (F). Maxcanú, April, 1903, *C. & E. Seler* 4021 (F). Motul, March, 1903, *C. & E. Seler* 3950 (N, F).

COSTA RICA: Nuestro Amo, alt. 500 meters, July, 1912, *Jiménez* 514 (N). Alajuela, alt. 900 meters, January, 1910, *Jiménez* 1007 (N). Nicoya, 1900, *Tonduz* (N).

The native names in Yucatán are given as "álamo," "kopó," and "coobo."

This species ranges nearly throughout Mexico and naturally so numerous specimens exhibit great variation. At first glance the form with nearly glabrous leaves described by Kunth as *Ficus cotinifolia* seems very different from the plant with densely hairy leaves to which Liebmann applied the name *longipes*. In the writer's mind, however, there is no doubt that all the specimens listed are conspecific. The leaf blades show much variation in outline, but often the range of variation upon a single specimen is nearly as great as in the whole series of specimens examined.

Ficus myxaefolia was described from cultivated specimens. The dimensions of the leaves (up to 17 cm.) are much greater than in our specimens, yet this size could easily be explained as the result of favorable cultural conditions. When Miquel transferred the species to Urostigma he referred to it Schiede and Deppe's no. 737, probably from Veracruz, giving a complete description of the plant. His diagnosis agrees very well with the less pubescent specimens here listed. If Miquel was correct in his identification, as very probably he was, being an intensive student of this genus, there is little doubt that *Ficus myxaefolia* is properly placed in synonomy here. The specific name, derived from an old generic name applied to certain species of Cordia, would indicate a plant with leaves similar to those of *Ficus cotinifolia*.

The description of *Urostigma glaucum* agrees in every detail with the present material. The type of this species was collected by Liebmann along the Río de las Vueltas, Oaxaca.

Many of the specimens cited have been distributed as *Ficus tecolutensis*, sometimes with a note to the effect that the receptacles are, however, sessile. That species, as shown by a specimen of the type collection in the Gray Herbarium, is a wholly different plant.

Rose's no. 11316 from Mitla, Oaxaca, is remarkable in having petioles up to 11.5 cm. long, which thus equal or exceed the blades. Otherwise it does not appear to differ from typical *cotinifolia*. In most specimens the petioles are much shorter than the leaf blades.

23. Ficus petiolaris H. B. K. Nov. Gen. & Sp. **2**: 49. 1817.

Urostigma petiolare Miquel, Lond. Journ. Bot. **6**: 527. 1847.

Ficus jaliscana S. Wats. Proc. Amer. Acad. **26**: 150. 1891.

Small or large tree with stout, thick, grayish or yellowish branches, the branchlets glabrous; petioles slender, half as long as the blades or longer, often equaling them; stipules brown, glabrous or sparsely puberulent, large; leaf blades cordate-orbicular, 6.5 to 15 cm. broad, broadly rounded at the apex and abruptly short-apiculate, the basal sinus deep and narrow, the rounded lobes sometimes overlapping, the upper surface of the blades glabrous, pale green or glaucous, the lower surface pale, glabrous except for tufts of long white hairs in the axils of the principal veins; peduncles geminate, 7 to 20 mm. long, glabrous; involucre bilobate, the lobes short, rounded, puberulent; receptacles globose or depressed-globose, 10 to 15 mm. in diameter, densely fulvous-villous when young, in age minutely puberulent or glabrate, sometimes spotted, the ostiole prominent.

TYPE LOCALITY: Western slope of the Sierra Madre near Mazatlán, Sinaloa, and Acahuizatla, Guerrero. Type collected by Bonpland.

SPECIMENS EXAMINED.

SONORA: Granados, alt. 1,110 meters, 1894, *Hartman* 217 (N, G, F). Alamos, 1899, *Goldman* 286 (N, G). Sierra de Alamos, 1910, *Rose, Standley & Russell* 12810 (N). Mina Grande, April, 1892, *Eisen* (C).

SINALOA: Near Colomas, 1897, *Rose* 1695 (N), 3192 (N). Mazatlán, 1910, *Rose, Standley & Russell* 13744 (N). Valley of Río Fuerte, 1898, *Goldman* 243 (N, G). Topolobampo, 1910, *Rose, Standley & Russell* 13284 (N).

JALISCO: Bolaños, 1897, *Rose* 2908 (N). Barranca near Guadalajara, 1892, *Pringle* 4336 (N, F). Cliffs near Guadalajara, December, 1889, *Pringle* 2932 (G, type of *F. jaliscana*).

GUERRERO: Near Iguala, 1905, *Rose, Painter & Rose* 9400 (N). Between Tlapa and Ayusinapa, alt. 1,350 to 1,710 meters, 1894, *Nelson* 2099 (N, G).

MORELOS: Cuernavaca, 1904, *Pringle* 13196 (distributed as *F. guadalajarana*) (N, G, F).

This tree is abundant all along the western coast of Mexico, growing on dry slopes, often on the face of cliffs. It is perhaps the most distinct of all the Mexican species, being strongly marked by the tufts of long white hairs on the lower surface of the leaves, as well as by the leaf outline.

The type of *Ficus jaliscana* was collected on cliffs near Guadalajara by Pringle (no. 2932). It seems strange that Watson did not associate Pringle's specimens with the species so accurately described by Kunth.

Here, doubtless, is to be placed Seemann's no. 1459, from Mazatlán, Mexico, referred doubtfully to *Ficus nymphaeifolia* L. by Hemsley.[1] That species somewhat resembles *F. petiolaris*, but is very distinct. It has been collected recently in Colombia (*H. H. Smith* 1455).

24. Ficus donnell-smithii Standley, sp. nov.

Small tree, 4 to 5 meters high; branches slender, dark grayish brown, the young ones paler, finely and densely puberulent or short-hirtellous, tardily glabrate; stipules narrowly triangular, acuminate, 5 to 7 mm. long, finely sericeous-puberulent; petioles slender, 7 to 18 mm. long, puberulent; leaf blades oblong-elliptic to very narrowly oblong or lance-oblong, 7 to 15 cm. long, 1.8 to 2.7 cm. wide, slightly narrowed to the obtuse subemarginate 3-nerved base, usually gradually tapering to the acuminate or long-acuminate apex but sometimes obtuse or rounded, dark green, thin, scaberulous on the upper surface, glabrate in age, beneath pilose with very short whitish hairs, becoming glabrate, the lateral veins not prominent, 7 or 8 on each side, remote, ascending at an angle of about 45 degrees, slightly arcuate, obscurely anastomosing near the margin, the veinlets inconspicuous; peduncles geminate, slender, 6 to 7 mm. long, puberulent; involucre bilobate, 3 to 4 mm. broad, the lobes rounded, reflexed or spreading, brown, puberulent outside; receptacles subglobose, 8 to 9 mm. in diameter, puberulent but becoming glabrate, the ostiole not prominent, 2.5 mm. broad, closed by 3 broad rounded scales; sepals ferruginous.

Type in the U. S. National Herbarium, no. 576518, collected at Cubilquitz, Department of Alta Verapaz, Guatemala, altitude 350 meters, May, 1902, by H. von Türckheim (no. II. 597; J. D. Smith, no. 8289.) The same collection is represented by nos. 796063–796065 of the National Herbarium and by specimens in the Gray Herbarium and the herbarium of the Field Museum of Natural History. Also obtained at the type locality in August, 1900, by the same collector (no. 7773) (N, G).

Very distinct from all other species in its very narrow leaf blades. In some respects it agrees with the diagnosis of *Ficus guatemalana*, which was based upon plants cultivated at Berlin, obtained in Guatemala by Warscewicz. That species was described as having much larger, proportionally broader blades. While it may, nevertheless, be the same as the plant here described, judging from the description it seems more properly referable to synonymy under *F. lapathifolia* (see p. 24). Both collections here cited were distributed as *Ficus lancifolia*, but that is a very different plant (see p. 25).

25. Ficus palmeri S. Wats. Proc. Amer. Acad. **24**: 77. 1889.

Large or small tree with yellowish bark; young branches stout, densely white-pilose, finally becoming glabrate; stipules broadly ovate-triangular, 1.5 to 2 cm. long, acuminate, thin, dark brown, glabrous; petioles mostly slender, 1.5 to 5 cm. long, short-pilose or puberulent; leaf blades very variable in outline but usually broadly ovate-deltoid, sometimes cordate-orbicular, 6 to 14 cm. long, 4 to 11.5 cm. wide, truncate to deeply cordate at the base, broadly rounded to acutish at the apex, coria-

[1] Biol. Centr. Amer. Bot. **3**: 146. 1883.

ceous, glaucous green, when young densely pubescent on both surfaces with short, white, straight or crispate hairs, in age glabrate on the upper surface; peduncles geminate, 5 to 25 mm. long, densely pubescent, or glabrate in age; involucre bilobate, small, the lobes rounded, pubescent; receptacles turbinate-globose, 12 to 15 mm. in diameter, flattened on the top, densely soft-pubescent or finally glabrate, the ostiole prominent, the scales broadly triangular, obtuse; sepals pale brown.

TYPE LOCALITY: San Martín Island, Lower California. Type collected by Palmer in 1887 (no. 413).

SPECIMENS EXAMINED:

LOWER CALIFORNIA: San Martín Island, 1887, *Palmer* 413 (N, G, type, C). El Potrero, 25 miles southwest of Mulegé, alt. 180 meters, October, 1905, *Nelson & Goldman* 7234 (N). Seal Island, April, 1911, *Rose* 16817 (N). Near Calmallí, alt. 480 meters, 1898, *Purpus* 1 (N, F, C). Tiburón Island, 1895, *McGee* (N, C); April, 1911, *Rose* 16786 (N). Head of Concepción Bay, April, 1911, *Rose* 16701 (N). Santa Rosalía, 1889, *Palmer* 210 (N, G). Cape San Lucas, March, 1911, *Rose* 16387 (N). Between Cajón and El Sacatón, alt. 60 to 150 meters, December, 1905, *Nelson & Goldman* 7363 (N). Yubáy, alt. 600 meters, September, 1905, *Nelson & Goldman* 7149 (N). San Juanico, 1897, *Anthony* (F). Purísima, 1889, *Brandegee* (F). San Benito, April 10, 1889, *Brandegee* (C). Comandú, *Brandegee* (C).

The fruit is said to be edible, but with its small amount of pulp and its hairy indument it can not be very palatable.

The species is a variable one in several respects, but especially in leaf form. In some cases the leaves are soon glabrate, but in others they retain their pubescence to maturity. Usually the blades are truncate or subcordate at the base. In some of the Tiburón Island specimens, however, they are deeply cordate, with overlapping lobes, reminding one of the leaves of *Ficus petiolaris*, although even in sterile specimens these two are easily distinguished by the difference in pubescence. In the material from Concepción Bay the peduncles are remarkably long and the receptacles small and glabrate, yet there is little doubt that the specimens are conspecific with the others cited.

In the type collection the leaves are smaller and more densely pubescent than is usual in the species.

26. Ficus brandegei Standley, sp. nov.

Young branches glaucous, glabrous or pruinose-puberulent, reddish brown in age; stipules narrowly triangular, 12 to 18 mm. long, long-acuminate, dark brown, glabrous; petioles stout, 1.5 to 3.5 cm. long, glabrous; leaf blades broadly deltoid-ovate, 7 to 10.5 cm. long, 5 to 8 cm. wide, subcordate or cordate at the base and 5-nerved, obtuse or broadly obtuse at the apex, coriaceous, glabrous, pale green above, glaucescent beneath, the lateral veins slender but prominent beneath, 6 to 8 on each side, divergent at an angle of 45 to 60 degrees, straight, arcuately anastomosing near the margin; peduncles geminate, 2.5 to 4 cm. long, glabrous; involucre deeply bilobate, 10 to 12 mm. long, the lobes rounded, pruinose-puberulent; receptacles globose, 1.5 cm. in diameter, glabrous, the ostiole prominent, closed by 3 suberect valvate scales.

Type in the herbarium of the University of California, no. 142205, collected at San José del Cabo, Lower California, Mexico, September 15, 1899, by T. S. Brandegee. Another specimen in the same herbarium (no. 116819) was obtained at the same locality by Brandegee, September 16, 1890 (no. 561).

Ficus brandegei is closely related to *F. palmeri*, also of Lower California, and may be only a form of it. The latter species, however, has copiously pubescent leaves and receptacles, and the receptacles are pyriform-globose. In *F. brandegei* the leaf blades are perfectly glabrous, even in bud, and all the receptacles appear to be globose. The latter character perhaps will not hold when a larger series of specimens has been secured. The character of the pubescence, nevertheless, seems to be sufficient for the separation of the two species, for in none of the other American species do we find

glabrous and pubescent forms. In some species, for example *F. cotinifolia*, leaves which are at first pubescent later become glabrate, but traces of the pubescence may be found even in age.

27. Ficus pringlei S. Wats. Proc. Amer. Acad. **26**: 150. 1891.

Small or medium-sized tree; older branches reddish brown, glabrate, the young ones densely villous with fulvous hairs; stipules triangular-oblong or ovate, about 1.5 cm. long, acute, densely villous; petioles stout, 5 to 11 mm. long, villous; leaf blades ovate-oval or deltoid-ovate, 4.5 to 8 cm. long, 2.5 to 6 cm. wide, subcordate or emarginate at the base, very obtuse or sometimes rounded at the apex, thick-coriaceous, rugose, yellowish green, the upper surface finely hirtellous or in age glabrate, the lower surface densely short-villous with grayish or slightly fulvous hairs, the lateral veins prominent, usually 6 on each side, ascending at an angle of about 50 degrees, distant, nearly straight, anastomosing near the margin, the veinlets prominent, finely reticulate; peduncles geminate, stout, 2 to 4 mm. long, densely villous; involucre bilobate, the lobes rounded, nearly or quite half as long as the receptacle, appressed, densely and finely villous-sericeous on both surfaces; receptacles depressed-globose, about 1 cm. broad, finely sericeous with short white hairs when young but soon glabrate, the ostiole prominent, closed by 3 suberect, rounded, dark brown, pubescent scales; sepals dark ferruginous.

TYPE LOCALITY: In the barranca near Guadalajara, Jalisco. Type collected by Pringle, December, 1889 (no. 2928).

SPECIMENS EXAMINED:

JALISCO: Near Guadalajara, December, 1889, *Pringle* 2928 (G, type); July, 1902, *Pringle* 11174 (N, G, F); September, 1891, *Pringle* 3865 (N, G, F); September, 1903, *Pringle* 7366 (N). On the road between Bolaños and Guadalajara, September, 1897, *Rose* 3065 (N).

The fruit is said to be edible.

The specimens are very uniform, and, so far as is now known, the species is very restricted in its distribution.

28. Ficus microchlamys Standley, sp. nov.

Older branches nearly black, glabrate, the young ones tomentose; stipules ovate-triangular, about 7 mm. long, densely fulvous-villous; petioles stout, 10 to 13 mm. long, fulvous-tomentose; leaf blades broadly oblong, ovate-oblong, oblong-oval, or rounded-ovate, 6 to 12 cm. long, 3.5 to 7.3 cm. wide, subcordate or emarginate at the base, rounded or obtuse and very shortly apiculate at the apex, thick-coriaceous, pale green on the upper surface and villosulous along the veins or glabrate, beneath densely and loosely tomentose with fulvous or grayish hairs, the lateral veins very prominent beneath, 11 or 12 on each side, approximate, parallel, nearly straight, divergent at an angle of about 50 degrees, arcuately anastomosing near the margin, the veinlets prominent, coarsely reticulate; peduncles geminate, stout, 5 to 7 mm. long, fulvous-villous; involucre bilobate, very small, the lobes rounded, 2 to 3 mm. long, densely villous outside, glabrous within, reflexed; receptacles subglobose, 12 mm. in diameter, very densely fulvous-villous, the ostiole rather prominent; sepals dark ferruginous.

Type in the U. S. National Herbarium, no. 41638, collected on rocky bluffs of a barranca near Guadalajara, Jalisco, Mexico, October 9, 1891, by C. G. Pringle (no. 3883). Specimens of the same collection are in the Gray Herbarium and in the herbaria of the Field Museum of Natural History and the University of California.

ADDITIONAL SPECIMENS EXAMINED:

TEPIC: Tepic, 1892, *Palmer* 2006 (N).

VERACRUZ: Orizaba, *Botteri* 424 (G).

In general appearance the proposed species resembles *Ficus pringlei*, from the same locality, but in the latter the involucre is appressed and three times as large, while the pubescence of the receptacles is very different and the peduncles are much shorter.

29. Ficus velutina Willd. Sp. Pl. 4: 1141. 1806.

Large tree; branches brownish, the young ones fulvous-hirtellous, very stout, glabrate in age; stipules 1.5 to 2 cm. long, ovate-triangular, acuminate, fulvous or ferruginous-sericeous outside; petioles stout, 1.3 to 3.2 cm. long, villous or villous-tomentose when young, glabrate in age; leaf blades oval, ovate-oval, obovate-oval, or broadly obovate-oblong, 9 to 26 cm. long, 5.5 to 11.5 cm. wide, often slightly narrowed toward both ends, rounded, truncate, or subcordate at the base, always at least emarginate, rounded or very obtuse at the apex and usually very shortly obtuse-apiculate, pale green, the upper surface scaberulous and puberulent along the veins or in age glabrate, the lower surface at first tomentulose, becoming short-pilose, or finally glabrate, the costa stout, bearing a large black gland at the base, the lateral veins prominent, 7 to 12 on each side, ascending or divaricate, distant, subarcuate, anastomosing near the margin, the veinlets prominent, densely or coarsely reticulate; peduncles geminate, 2 to 3 mm. long, very thick, short-pilose; involucre bilobate, about 1 cm. in greatest diameter, the lobes obtuse, fulvous or ferruginous-tomentulose outside, becoming glabrate, spreading or reflexed; receptacles globose, 1.3 to 1.7 cm. in diameter, smooth or verrucose, minutely sericeous-puberulent, becoming glabrate, the ostiole rather prominent, 4 mm. broad; sepals ferruginous.

TYPE LOCALITY: Near Río Xayo and Sambingo, between Almaguer and Pasto, Colombia.[1] Type collected by Bonpland.

SPECIMENS EXAMINED:

COSTA RICA: Camino á Desamparados, November, 1910, *Tonduz & Jiménez* 17541 (N). Nuestro Amo, Hacienda de Dr. Núñez, alt. 500 meters, July, 1912, *Jiménez* 517 (N). Parque Nacional, San José, alt. 1,000 meters, November, 1901, *Pittier* 16215 (N). Alajuela, February, 1910, *Jiménez* 706 (N). Desamparados, alt. 1,180 meters, December, 1913, *Jiménez* 982 (N).

PANAMA: Sabana del Macano, Caldera, Chiriquí, alt. 200 to 300 meters, March, 1911, *Pittier* 3359 (N).

The native name in Costa Rica is given as "chilamate."

The specimens cited agree very well with the amplified description published by Kunth.[1] They exhibit a good deal of variation, especially in leaf form. The first collection cited is remarkable in having rather narrow leaf blades with divaricate lateral veins. Pittier's no. 16215, determined by Warburg as a new species, has broad blades, mostly broadest near the base, and very conspicuous veinlets.

30. Ficus lapathifolia (Liebm.) Miquel, Ann. Mus. Bot. Lugd. Bat. 3: 297. 1867.

Urostigma lapathifolium Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 319. 1851.

Urostigma guatemalanum Miquel, Versl. Med. Kon. Akad. Amsterdam 13: 411. 1862.

Ficus guatemalana Miquel, Ann. Mus. Bot. Lugd. Bat. 3: 298. 1867.

Branches dark brownish gray, the young ones puberulent and hirtellous with gray hairs, the pubescence persistent; stipules ovate-triangular or lance-triangular, 15 to 18 mm. long, densely whitish-sericeous outside, or the pubescence slightly spreading; petioles 1 to 3.2 cm. long, stout, densely puberulent and whitish-hirtellous, becoming glabrate; leaf blades oval to broadly oblong, 6 to 19 cm. long, 3.5 to 9 cm. wide, rounded or subtruncate and emarginate or subcordate at the base, 3 or 5-nerved, rounded or obtuse at the apex, often very shortly and broadly obtuse-apiculate, coriaceous, the upper surface at first copiously pubescent with short, grayish, spreading or appressed hairs, scaberulous or glabrate in age, beneath fulvous, densely pubescent with short, straight or crispate, spreading or matted hairs, sometimes becoming glabrate, the lateral veins prominent, 7 to 13 on each side, distant, straight, laxly and arcuately anastomosing near the margin, the veinlets inconspicuous, coarsely reticulate; peduncles geminate, 4 to 9 mm. long, stout, hirtellous; involucre bilobate, about

[1] H. B. K. Nov. Gen. & Sp. 2: 46. 1817.

8 mm. in greatest diameter, the lobes broadly rounded, densely sericeous outside, brown within and glabrous; receptacles globose, 15 to 22 mm. in diameter, very densely whitish-sericeous with short hairs, the ostiole not prominent, closed by 3 broad, rounded, dark brown scales; sepals dark ferruginous.

TYPE LOCALITY: Yecoatla and Colipa, Veracruz. Type collected by Liebmann.

SPECIMENS EXAMINED:

TAMAULIPAS: Tampico, alt. 15 meters, 1910, *Palmer* 198 (N).

GUERRERO: Jamiltepec to Río Verde, alt. 120 to 300 meters, February, 1895, *Nelson* 2362 (N, G).

CHIAPAS: San Vicente, April, 1904, *Goldman* 861 (N).

GUATEMALA: Amatitlán, alt. 1,170 meters, February, 1890, *J. D. Smith* 1930 (G).

The type of *Urostigma guatemalanum* was cultivated at Berlin from material collected in Guatemala by Warscewicz. Liebmann describes the leaf blades of *Urostigma lapathifolium* as being 21 to 25.5 cm. long and 13 to 15 cm. wide, which is larger than in any specimens examined by the writer, although the proportions are the same. Otherwise his description agrees well with the specimens cited.

31. Ficus ovalis (Liebm.) Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 298. 1867.

Urostigma ovale Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 324. 1851.

Young branches brownish, glabrous; stipules 10 to 15 mm. long, long-acuminate, thin, brown, glabrous, deciduous; petioles stout, 1 to 3.5 cm. long; leaf blades oval, oval-obovate, or obovate-oblong, 6.5 to 10.5 cm. long, 4 to 5.5 cm. wide, rounded at the base and emarginate, 3 or 5-nerved, rounded or obtuse at the apex, subcoriaceous, glabrous, green above, slightly paler beneath, the veins slender but very prominent beneath, 4 to 6 on each side, divergent at an angle of 50 to 60 degrees, arcuately anastomosing near the margin; peduncles geminate, stout, 3 to 6 mm. long; involucre bilobate, inconspicuous, about 5 mm. long, the lobes rounded, spreading, thin, brown, glabrous; receptacles globose, 6 to 8 mm. in diameter, glabrous, the ostiole slightly prominent, closed by 2 brown scales.

TYPE LOCALITY: Guanacaste, Costa Rica. Type collected by Örsted.

SPECIMENS EXAMINED:

NICARAGUA: Without definite locality, *Wright* (N, G).

The leaves of *Ficus ovalis* resemble those of *F. cotinifolia*, but in that species the receptacles are sessile.

32. Ficus padifolia H. B. K. Nov. Gen. & Sp. **2**: 47. 1817.

Ficus complicata H. B. K. Nov. Gen. & Sp. **2**: 48. 1817.

Ficus prinoides Willd. err. det. Schlecht. & Cham. Linnaea **6**: 357. 1831.

Ficus lancifolia Hook. & Arn. Bot. Beechey Voy. 310. 1839, not *F. lancifolia* Moench, 1794.

?*Ficus consanguinea* Kunth & Bouché, Ind. Sem. Hort. Berol. 17. 1846.

Urostigma lancifolium Miquel, Lond. Journ. Bot. **6**: 538. 1847.

Urostigma schiedeanum Miquel, Lond. Journ. Bot. **6**: 539. 1847.

Urostigma padifolium Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 324. 1851.

Urostigma complicatum Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 325. 1851.

Urostigma sapidum Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 327. 1851.

Urostigma baccatum Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 327. 1851.

Urostigma turbinatum Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 328. 1851.

Urostigma liebmannianum Miquel in Seem. Bot. Voy. Herald 195. 1854.

Urostigma consanguineum Miquel, Versl. Med. Kon. Akad. Amsterdam **13**: 408. 1862.

Urostigma sulcipes Miquel, Versl. Med. Kon. Akad. Amsterdam **13**: 413. 1862.

Ficus turbinata Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 298. 1867, not *F. turbinata* Willd. 1805.

Ficus sapida Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 298. 1867.

Ficus liebmanniana Miquel, Ann. Mus. Bot Lugd. Bat. 3: 298. 1867.
Ficus sulcipes Miquel, Ann. Mus. Bot. Lugd. Bat. 3: 298. 1867.
Ficus baccata Miquel, Ann. Mus. Bot. Lugd. Bat. 3: 299. 1867.
Ficus fasciculata S. Wats. Proc. Amer. Acad. 24: 78. 1889, not *F. fasciculata* King, 1888.
Ficus sonorae S. Wats. Proc. Amer. Acad. 24: 78. 1889.

Large or small tree with pale yellowish bark; young branches rather slender, fulvous or brownish, glabrous or minutely puberulent; stipules 5 to 15 mm. long, narrow, long-acuminate or attenuate, thin, brown, deciduous, glabrous or minutely puberulent; petioles slender or stout, 5 to 30 mm. long, glabrous or minutely puberulent; leaf blades very variable in outline, oblong, elliptic-oblong, lance-oblong, lanceolate, oval, ovate, or rarely broadly ovate, 4 to 12 cm. long, 1.5 to 4.7 cm. wide, rounded or obtuse at the base, sometimes subemarginate, gradually or somewhat abruptly acute to long-acuminate at the apex or rarely obtuse, the tip of the blade acute or obtuse, coriaceous or subcoriaceous, glabrous, bright or yellowish green, concolorous, the costa prominent beneath, the lateral veins very slender, slightly prominent beneath, 5 to 12 on each side, divergent at an angle of 45 to 60 degrees, usually arcuate, laxly anastomosing near the margin, the blades usually conspicuously 3-nerved at the base, the 2 basal lateral veins commonly much more conspicuous than the other lateral ones; peduncles geminate, slender, glabrous or puberulent, sometimes longer but usually shorter than the receptacles; involucre inconspicuous, deeply bilobate, 3 to 4 mm. long, the lobes rounded, spreading, glabrous or minutely puberulent; receptacles subglobose, 9 to 12 mm. in diameter, spotted, glabrous or minutely puberulent, the ostiole deeply depressed, usually surrounded by an elevated annulus.

TYPE LOCALITY: Near Acapulco, Guerrero. Type collected by Bonpland.

ILLUSTRATION: Seem. Bot. Voy. Herald *pl. 35.*

SPECIMENS EXAMINED:

SONORA: Guaymas, November, 1887, *Palmer* 645 (N, G), 92 (G, type of *F. sonorae*, N, C), 646 (G, type of *F. fasciculata*, N); June, 1897, *Rose* 1207 (N, G); May 11, 1892, *Brandegee* (C). Sierra de Alamos, March, 1910, *Rose, Standley & Russell* 12809 (N), 12991 (N).

SINALOA: Guadalupe, April, 1910, *Rose, Standley & Russell* 14774 (N). Villa Unión, April, 1910, *Rose, Standley & Russell* 13904 (N), 13906 (N), 13947 (N). La Rastra, alt. 600 meters, March, 1899, *Goldman* 362 (N, G). Rosario, July, 1897, *Rose* 1824 (N); April, 1910, *Rose, Standley & Russell* 14646 (N). Mazatlán, March and April, 1910, *Rose, Standley & Russell* 13745 (N), 14128 (N). Valley of Río Fuerte, October, 1898, *Goldman* 244 (N, G).

TEPIC: Acaponeta, April, 1910, *Rose, Standley & Russell* 14444 (N); June, 1897, *Rose* 1452 (N). San Blas, June, 1897, *Nelson* 4342 (N). María Madre Island, May, 1897, *Nelson* 4288 (N, G). Tepic, 1892, *Palmer* 1855.

JALISCO: Near Guadalajara, September, 1891, *Pringle* 3860 (N, G, F). Casa Fuerte, April, 1905, *Griffiths* 3334 (N).

TAMAULIPAS: Tampico, alt. 15 meters, January, 1910, *Palmer* 140 (N).

SAN LUIS POTOSÍ: Tamasopo Canyon, July, 1890, *Pringle* 3554 (G, F). Las Palmas, June, 1892, *Pringle* 5305 (G).

COLIMA: Colima, 1891, *Palmer* 1119 (N, G).

MICHOACÁN?: La Providencia, alt. 900 meters, April, 1899, *Langlassé* 1014 bis (N).

GUERRERO: Between Copala and Juchitango, alt. 60 to 180 meters, February, 1895, *Nelson* 2311 (N, G). Acapulco, 1894–95, *Palmer* 62 (N, G, F).

MORELOS: Near Cuernavaca, May, 1899, *Rose & Hough* 4350 (N).

OAXACA: Valley of Oaxaca, alt. 1,530 to 1,740 meters, September, 1894, *Nelson* 1252 (N. G). Nazareno Etla, alt. 1,590 meters, June, 1895, *L. C. Smith* 489 (G). Cerro del Fule, alt. 1,600 meters, May, 1907, *Conzatti* 1805 (F). Between San Carlos and San Bartolo, alt. 900 to 1,440 meters. April, 1895,

Nelson 2562 (N, G). Between Pochutla and Plunia, alt. 150 to 750 meters, March, 1895, *Nelson* 2462 (N, G). Huanchilla, Nochixtlan, alt. 2,000 meters, June, 1901, *Conzatti & Gonzáles* 1205 (G). Cerro San Antonio, alt. 1,600 meters, October, 1906, *Conzatti* 1592 (F). Guatulco, *Liebmann* (G, type collection of *Urostigma turbinatum*).

VERACRUZ: Orizaba, *Botteri* 425 (G); July, 1857, *Mohr & Botteri* 425 (N). Zacuapan, March, 1912, *Purpus* 6625 (N, G, F, C). Maloapam, *Liebmann* (G). Papantla to Zamora, March, 1898, *Goldman* 92 (G). Wartenberg, 1858, *Ervendberg* 332 (G).

TABASCO: San Juan Bautista, June, 1889, *Rovirosa* 513 (N).

GUATEMALA: Between Salamá and Rabinal, May, 1904, *Cook & Doyle* 281 (N). Salamá, June, 1904, *Cook* 267 (N). Cubilquitz, Department of Alta Verapaz, alt. 350 meters, May, 1901, *von Türckheim* (J. D. Smith, no. 7981) (N, G); August, 1900, *von Türckheim* (J. D. Smith, no. 7774) (N, G). Cenaguilla, Department of Santa Rosa, alt. 1,300 meters, November, 1892, *Heyde & Lux* (J. D. Smith, no. 4402) (N, G). Joyabaj, May, 1906, *Cook* 21 (N). Near Guatemala City, July, 1860, *Hayes* (G). Hills along the southern shore of Lake Amatitlán, alt. 1,350 meters, April, 1905, *Pittier* 110 (N).

EL SALVADOR: Without definite locality, *Renson* 71 (N).

NICARAGUA: Without definite locality, *Wright* (N, G).

COSTA RICA: San José, alt. 1,000 meters, November, 1901, *Pittier* 16217 (N); November, 1910, *Tonduz & Jiménez* 17539 (N). San Francisco de Guadalupe, alt. 1,200 meters, August, 1897, *Tonduz* 11299 (N). Portail de la Hacienda Belmira, près Santa María de Dota, alt. 1,450 meters, January, 1898, *Tonduz* 11650 (N). San Pedro, près San Ramón, alt. 1,300 meters, April, 1913, *Tonduz* 17655 (N). Entre San Pedro et le Tremedal, près San Ramón, alt. 1,200 to 1,300 meters, April, 1913, *Tonduz* 17674 (N, F). Cartago, alt. 1,275 meters, April, 1894, *J. D. Smith* 4936 (N); October, 1887, *Cooper* (J. D. Smith, no. 5947B) (N). Aguacaliente, May, 1890, *Pittier* 2517 (N).

PANAMA: El Boquete, Chiriquí, alt. 1,000 to 1,300 meters, March, 1911, *Pittier* 2923 (N), 2889 (N).

Ficus padifolia is one of the most abundant and widely dispersed of the North American strangler figs. The young plant at first climbs the trunk of some tree, often a palm, by attaching its long, slender ropelike stems to the host plant by means of aerial roots. In time the fig develops a large trunk and crown and surrounds and kills the host tree. With age it forms a very broad crown, from the branches of which aerial roots descend and enter the ground, thus developing new trunks and forming a tree of the familiar banyan type of Asia and Africa. The trees at maturity are very handsome. The receptacles are edible.

Ficus padifolia is known by various local names: Sonora, "nacapuli" (Palmer); Colima, "camichín" (Palmer), or "comuchín" (Langlassé); Oaxaca, "palo de coco" (Liebmann); Costa Rica, "higuito" (Örsted); Tabasco, "amatillo" or "capulín grande" (Rovirosa).

As is to be expected from its wide range, this species exhibits great variation, more in fact than any other Central American species. This is indicated by the large number of synonyms cited above. With a small series of specimens it would be possible to differentiate several "species," but with the numerous collections at hand all the characters heretofore relied upon for differentiation break down. There is wide variation in leaf form and two types of leaves can be distinguished: one in which the blade is ovate, coriaceous, prominently 3-nerved at the base, with a very acute apex, becoming pale yellowish green when dry; the other with mostly lance-oblong blades, which are thinner, obscurely nerved, bright green or dark when dry, with an obtuse apex. The first form is chiefly western in its distribution and the second southern. Intermediate forms are found, however, and with the leaf characters there

are no concomitant peculiarities of pubescence or fruit. The form with broad leaves is usually quite glabrous and the other minutely puberulent on the young branches and stipules, but this is not invariably true. There seem to be no definite differences in the receptacles. Although the writer has tried every possible character as a basis of segregation, he has found nowhere any constant specific differences.

Langlassé's no. 1014 bis is noteworthy for its small receptacles, suggesting *F. prinoides* Kunth & Bouché, but the leaves are unlike those of that species. It may represent an undescribed species, but further collections are necessary to settle this point. A few of the Costa Rican specimens are notable for their oblanceolate leaf blades. Several Costa Rican collections were distributed under an unpublished name of Warburg's, but they seem to differ in no essential character from the mass of material examined.

Ficus padifolia was described from specimens having broad, thick leaf blades. The type of *F. complicata* was collected in Mexico near Guasitlan and Puente de Istla, by Bonpland. The type of *F. lancifolia* was from Tepic, Mexico. *Ficus consanguinea* was based upon plants of uncertain derivation grown at Berlin. Miquel referred to it specimens obtained by Schiede between Sepillo and Estura, Mexico. Indeed, it is not certain that it is correctly placed here in synonymy. The type of *Urostigma sapidum* was collected at Cartago, Costa Rica, by Örsted; that of *U. baccatum* at Hacienda de Santa Cruz, near Tehuantepec, Oaxaca, by Liebmann; and that of *U. turbinatum* at Guatulco, Oaxaca, by Liebmann. *Urostigma liebmannianum* was based upon material collected in Panama along the Chagres River. The type of *Urostigma sulcipes* was collected at Atlacomulco, Mexico, by Schiede and Deppe. Both *Ficus fasciculata* and *F. sonorae* were described from material collected at Guaymas, Sonora, by Palmer. It seems strange that Watson should have described both these species at the same time, for the specimens upon which they were based all look as though they might have come from the same tree.

Many of the collections listed here have been determined as *Ficus ligustrina* Kunth & Bouché.[1] That species was based upon cultivated specimens sent from Caracas by Moritz. It is probably the same as *F. prinoides* Humb. & Bonpl.,[2] the type of which was from Mérida, Colombia. The latter species, to which some of the Mexican and Central American specimens above listed have been referred, differs from *F. padifolia* in its small receptacles, with a plane or slightly elevated ostiole. The writer has seen the following specimens:

COLOMBIA: Santa Marta, *H. H. Smith* 2420 (N, F, G), 1458 (N, F, G), 1459 (N).

It occurs also in Trinidad, according to Warburg.[3]

33. Ficus oerstediana Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 299. 1867.

Urostigma oerstedianum Miquel in Seem. Bot. Voy. Herald 196. *pl. 36*. 1854.

Urostigma chiriquianum Miquel, Versl. Med. Kon. Akad. Amsterdam **13**: 412. 1862.

Ficus chiriquiana Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 298. 1867.

Tree of medium size; young branches grayish or brownish, puberulent or glabrate; stipules 5 to 15 mm. long, acuminate, glabrous or minutely puberulent outside, deciduous; petioles stout, 3 to 15 mm. long, glabrous; leaf blades obovate, obovate-oblong, elliptic-oblong, or oblanceolate, 4 to 11 cm. long, 1 to 4.5 cm. wide, usually cuneately narrowed to the obtuse or acute base, very obtuse or acute at the apex, or often short-apiculate with a broad obtuse acumen, coriaceous, concolorous, glabrous, the costa coarse and prominent, the lateral veins very slender, only slightly prominent, 9 to 15 on each side, divergent at an angle of 60 to 80 degrees, arcuately anastomosing into a distinct submarginal vein, the secondary lateral veins slender and parallel to the primary ones; peduncles geminate, slender, glabrous or minutely puberulent,

[1] Ind. Sem. Hort. Berol. 16. 1846.

[2] Willd. Sp. Pl. **4**: 1149. 1806.

[3] In Urban, Symb. Antill. **3**: 483. 1903.

3 to 7 mm. long; involucre bilobate, about 3 mm. long, inconspicuous, the lobes broadly rounded, spreading or reflexed, minutely puberulent or glabrate; receptacles globose, 4 to 6 mm. in diameter, glabrous, reddish, the ostiole small, plane or slightly elevated, closed by 3 scales.

TYPE LOCALITY: Chiriquí Volcano, Panama. Type collected by Seemann.

SPECIMENS EXAMINED:

GUATEMALA: Near Izabal, alt. 750 meters, February, 1907, *Kellerman* 6486 (N).

COSTA RICA: Nuestro Amo, July, 1912, *Jiménez* 516 (N).

PANAMA: Without definite locality, *Duchassaing* (G). Around Caldera, Chiriquí, alt. 200 to 300 meters, March, 1911, *Pittier* 3346 (N). Vicinity of David, Chiriquí, alt. 30 to 80 meters, February, 1911, *Pittier* 2822 (N), 2823 (N).

COLOMBIA: Santa Marta, *H. H. Smith* 2625 (N).

The type of *Urostigma chiriquianum* also came from the mountains of Chiriquí.

Ficus oerstediana is related to *F. prinoides* Humb. & Bonpl., but is distinguished by the obovate, closely and regularly veined leaf blades.

34. Ficus hemsleyana Standley.

Urostigma verrucosum Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 321. 1851.

Ficus verrucosa Hemsl. Biol. Centr. Amer. Bot. **3**: 148. 1883, not *F. verrucosa* Miquel, 1867.

Branches grayish or brownish, the young ones brown, glabrous or obscurely puberulent; stipules 10 to 17 mm. long, thin, deciduous, brown, glabrous or obscurely puberulent outside; petioles slender, 2 to 6 cm. long, glabrous or obscurely puberulent; leaf blades elliptic-oblong, or sometimes oblong-oval, oval, or ovate-oblong, 10 to 22 cm. long, 4 to 8 cm. wide, subcordate to rounded at the base and 3 or 5-nerved, abruptly acuminate or subcuspidate at the apex, or sometimes gradually acuminate, the acumen acute, glabrous, bright green on the upper surface, paler or brownish beneath, the lateral veins 7 to 13 on each side, divergent at an angle of about 60 degrees, arcuate or nearly straight, laxly and arcuately anastomosing near the margin; peduncles geminate, stout, half to two-thirds as long as the receptacles; involucre bilobate, about 4 mm. long, the lobes rounded; receptacles globose, about 1 cm. in diameter, green, minutely puberulent or glabrate, the ostiole slightly prominent, closed by 3 broad bracts.

TYPE LOCALITY: Nicaragua. Type collected by Örsted.

SPECIMENS EXAMINED:

GUATEMALA: San Miguel Uspantán, Department of Quiché, March, 1892, *Heyde & Lux* (J. D. Smith, no. 2886) (N, G).

EL SALVADOR: Without definite locality, *Renson* 70 (N), 138 (N).

COSTA RICA: San José, alt. 1,160 meters, October, 1897, *Tonduz* 11576 (N); November, 1910, *Tonduz & Jiménez* 17543 (N), 17542 (N). Camino en San Francisco de Guadalupe, October, 1910, *Jiménez* 13 (N). San Francisco de Guadalupe, alt. 1,170 meters, *Jiménez* 536 (N), 986 (N). Río Virilla, October, 1912, *Herb. Nac. Costa Rica* (N).

PANAMA: Chagres, March, 1850, *Fendler* 286 (N). Around Culebra, strangling an Attalea, January, 1911, *Pittier* 2318 (N).

Tonduz's no. 11576 was determined by Warburg as a new species and distributed under an unpublished name.

35. Ficus lentiginosa Vahl, Enum. Pl. **2**: 183. 1806.

Ficus populnea lentiginosa Warb. in Urban, Symb. Antill. **3**: 476. 1903.

Young branches brownish, glabrous; stipules 1 to 1.5 cm. long, acuminate, brown, glabrous, deciduous; petioles slender, 2.5 to 10.5 cm. long, glabrous; leaf blades oval or ovate-oval, 7.5 to 16 cm. long, 5 to 9.5 cm. wide, broadly rounded and sometimes subemarginate at the base, 5-nerved, obtuse or rounded at the apex and usually

abruptly short-acuminate with an obtuse acumen, subcoriaceous, glabrous, concolorous, the midvein very prominent beneath, the lateral veins slender, slightly prominent, 8 to 12 on each side, divergent at an angle of 70 to 80 degrees, slightly arcuate, laxly anastomosing near the margin; peduncles geminate, glabrous, 3 to 5 mm. long; involucre deeply bilobate, 4 mm. long, the lobes broadly rounded, brown, glabrous; receptacles subglobose, 8 to 9 mm. in diameter, glabrous, the ostiole slightly depressed, closed by 3 scales.

TYPE LOCALITY: Montserrat.

SPECIMENS EXAMINED:

GUERRERO: Acapulco, 1894–95, *Palmer* 355 (N, G, F).

This species occurs in Porto Rico, Montserrat, Guadeloupe, Martinique, Dominica, St. Vincent, Barbados, and Grenada. The above description is based wholly on Mexican specimens, which it is suspected came from a cultivated tree.

36. Ficus glycicarpa Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 297. 1867.

Urostigma glycicarpum Miquel, Versl. Med. Kon. Akad. Amsterdam **13**: 409. 1862.

Young branches brownish, glabrous or sparsely pilose; stipules about 1 cm. long, densely fulvous-sericeous outside; petioles stout, 1 to 2 cm. long, sparsely short-pilose or glabrate; leaf blades narrowly elliptic-oblong, narrowly obovate-oblong, or obovate, 7 to 18 cm. long, 4 to 7 cm. wide, rounded or subtruncate at the base and emarginate, sometimes deeply so, 5-nerved, obtuse or rounded at the apex and usually with a short broad obtuse acumen, coriaceous, glabrous, the costa and lateral veins very coarse and prominent beneath, the latter 7 to 12 on each side, divergent at an angle of about 45 degrees, nearly straight, arcuately anastomosing near the margin; peduncles geminate, 2 to 3 mm. long; involucre bilobate, small, thin, brown; receptacles globose, 1.5 to 2 cm. in diameter, glabrous or nearly so, the ostiole not prominent, closed by 3 brown scales.

TYPE LOCALITY: Hacienda de la Laguna, Veracruz. Type collected by Schiede, July, 1829.

SPECIMENS EXAMINED:

VERACRUZ: Region of Orizaba, August, 1866, *Bourgeau* 2818 (N, G).

Bourgeau's collection is the only one seen by the writer which agrees with Miquel's description. Miquel describes the largest leaf blades as being 20 cm. long and 7.5 cm. wide, dimensions which are not quite equaled by the present specimens.

37. Ficus bonplandiana (Liebm.) Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 298. 1867.

Ficus obtusifolia H. B. K. Nov. Gen. & Sp. **2**: 49. 1817, not *F. obtusifolia* Roxb. 1814.

?*Urostigma involutum* Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 320. 1851.

Urostigma bonplandianum Liebm. Dansk. Vid. Selsk. Skrivt. V. **2**: 323. 1851.

?*Ficus involuta* Miquel, Ann. Mus. Bot. Lugd. Bat. **3**: 298. 1867.

A large tree with short thick trunk and spreading crown; young branches very stout, densely leafy at the ends, sparsely puberulent; stipules triangular-oblong, acuminate, 1.5 to 3 cm. long, thin, dark brown, glabrous; petioles stout, 1 to 2 cm. long, glabrous; leaf blades obovate-oblong to broadly obovate, 11 to 21 cm. long, 5 to 9.5 cm. wide, cuneately narrowed to the base or rarely obtuse, rounded at the apex, coriaceous, concolorous, glabrous, the lateral veins prominent beneath, 6 to 8 on each side, ascending at an angle of 45 degrees, arcuate, distant and not closely parallel, obscurely anastomosing near the margin, the veinlets conspicuous, finely reticulate; peduncles geminate, 2 to 4 mm. long, very stout; involucre large, bilobate, often covering nearly half the receptacle, the lobes rounded, often split at the apex, finely and densely sericeous; receptacles globose, 1.5 to 2 cm. in diameter, densely and finely sericeous, the ostiole prominent, 3 mm. broad, the scales broad, rounded; sepals ferruginous.

TYPE LOCALITY: Near Acapulco, Guerrero. Type collected by Bonpland.

SPECIMENS EXAMINED:

SINALOA: Mazatlán, April, 1910, *Rose, Standley & Russell* 14104 (N); February 10, 1890, *Brandegee* (C).

TEPIC: Near Pedro Paulo, August, 1897, *Rose* 1972 (N).

SAN LUIS POTOSÍ: Micos, December, 1891, *Pringle* 3977 (N, G, F). San Dieguito, June, 1905, *Palmer* 635 (F, C).

OAXACA: Road between Nopala and Mixistepec, alt. 240 to 1,200 meters, March, 1895, *Nelson* 2434 (N, G).

GUERRERO: Acapulco, 1894–95, *Palmer* 373 (N, G, F).

MICHOACÁN: Ostula, November, 1906, *Emrick* 101 (F).

YUCATÁN: Cozumel Island, April, 1901, *Goldman* 650 (N, F). Progreso, 1901, *Goldman* 609 (N, F).

GUATEMALA: Gualán, Department of Zacapa, alt. 122 meters, January, 1906, *Kellerman* 5019 (N). Joyabaj (El Quiché), May, 1906, *Cook* 23 (N). Escuintla, Department of Escuintla, alt. 330 meters, March, 1890, *J. D. Smith* 2011 (G).

COSTA RICA: Near Nicoya, February, 1900, *Pittier* 13835 (N).

This is one of the strangler figs. In Costa Rica the native name is given as "palo de agua;" at Acapulco it is "amate." A tree at the latter locality, photographed by Palmer, has a trunk 1.8 meters in diameter, and a crown 19 meters broad.

The species has a remarkably wide range as compared with most of our species, yet the specimens are very uniform.

The description of *Urostigma involutum* strongly suggests this species. The peduncles are very short, and the young receptacles might well be taken to be sessile, as described by Liebmann. The type was collected between Sapoa and Tortuga, Nicaragua, by Örsted.

38. Ficus jonesii Standley, sp. nov.

Large tree with glabrous branches and leaves; stipules short, thin, sparsely sericeous outside; petioles slender, 3.5 to 7 cm. long; leaf blades oval-oblong to broadly ovate-oblong, very irregular in outline, 7.5 to 17.5 cm. long, 5 to 10 cm. wide, broad at the base and cordate or subcordate, 5-nerved, slightly narrowed to the broadly rounded or very obtuse apex, sometimes short-apiculate, thin, bright green, concolorous, the margins often undulate, the lateral veins rather prominent beneath, 5 to 9 on each side, distant, ascending at an angle of 50 to 60 degrees, subarcuate, laxly anastomosing near the margin, the veinlets prominent, reticulate; receptacles globose, 2.5 cm. in diameter, densely hirtellous; sepals ferruginous.

Type in the U. S. National Herbarium, no. 237888, collected at La Palma, Jalisco, Mexico, June 7, 1892, by Marcus E. Jones (no. 33). Sterile specimens of the same species were collected above Colomas, Sinaloa, July, 1897, by J. N. Rose (no. 3220).

Mr. Jones states that this is a very large tree with the general appearance of the honey locust, *Gleditsia triacanthos*. The species is well distinguished by the broad, irregular, long-petiolate, cordate or subcordate leaves. These are very irregular in outline and sometimes almost four-sided. The single receptacle of the type specimen is detached, consequently it may have been either sessile or pedunculate; probably it was pedunculate.

39. Ficus pittieri Standley, sp. nov.

Tree with glabrous branches and leaves; stipules short, densely white-sericeous; petioles stout, 2.5 to 4 cm. long, glabrous; leaf blades oval or oblong-oval, 16 to 21 cm. long, 7.5 to 10.5 cm. wide, rounded at the base and slightly decurrent, 5-nerved, rounded at the apex and broadly short-apiculate, deep green, concolorous, rather thin, with subundulate margins, the lateral veins 11 to 13 on each side, prominent but slender, divergent at an angle of 60 to 80 degrees, straight, rather distant, arcuately anastomosing near the margin, the veinlets inconspicuous but very finely reticulate; peduncles

geminate, about 3 mm. long and nearly as thick, glabrate; involucre bilobate, 7 mm. broad, the lobes rounded, thin, brown, spreading, glabrate; receptacles about 2 cm. in diameter, globose, green spotted with blackish purple, glabrate, the ostiole not prominent, 4 mm. broad, closed by 3 broad, rounded, dark brown scales; sepals ferruginous.

Type in the U. S. National Herbarium, no. 676759, collected around Gamboa, Canal Zone, Panama, altitude 20 to 100 meters, February 1, 1911, by H. Pittier (no. 2602).

Very similar to the type is Fendler's no. 285 from Chagres, Panama, which has blades almost exactly the same in outline but emarginate at the base. This is an important character, and consequently Fendler's collection may well represent a distinct species. It includes a single detached receptacle, much distorted by pressure. Until better fruit is obtained it seems best to refer this plant to *F. pittieri*.

Ficus pittieri resembles *F. hemsleyana*, but in the latter species the receptacles are much smaller.

40. Ficus goldmanii Standley, sp. nov.

Large tree with a short, very thick trunk supported by buttresses; branches gray or light brown, the young ones stout, glabrous or nearly so; stipules short, acuminate, sericeous or puberulent outside; petioles 1.8 to 3.5 mm. long, pruinose-puberulent, becoming glabrate; leaf blades oblong or elliptic-oblong, 7 to 17 cm. long, 3.5 to 7.3 cm. wide, rounded and cordate or emarginate at the 3 or 5-nerved base, the sinus closed, sometimes 3 to 4 mm. deep, slightly narrowed to an obtuse rounded apex or broadly rounded, sometimes subemarginate, thick-coriaceous, pale green, lustrous on the upper surface, slightly paler beneath, glabrous, the costa very stout and prominent beneath, the lateral veins evident but not prominent, 5 to 13 on each side, divergent at an angle of about 60 degrees, nearly straight, laxly arcuate-anastomosing near the margin, the veinlets inconspicuous; peduncles geminate, slender, 10 to 13 mm. long, minutely puberulent; involucre bilobate; receptacles globose, 2 to 2.5 cm. in diameter, spotted with light and dark green, grayish-puberulent or sparsely hirtellous with white hairs, the ostiole not prominent, 3 to 4.5 mm. broad, closed by thin, obtuse, green or brown scales; sepals pale brown.

Type in the U. S. National Herbarium, no. 335786, collected at Alamos, Sonora, Mexico, January 1, 1899, by E. A. Goldman (no. 288). There is a specimen of the same collection in the Gray Herbarium.

ADDITIONAL SPECIMENS EXAMINED:

SONORA: Arroyo at base of Sierra de Alamos, March, 1910, *Rose, Standley & Russell* 13006 (N).

SINALOA: Cofradía, October, 1904, *Brandegee* (C).

DURANGO: Chacala, March, 1899, *Goldman* 355 (G).

JALISCO: Near Guadalajara, September, 1891, *Pringle* 3890 (N, F).

The proposed species is related to *Ficus lapathifolia*, but in that the leaf blades are larger, pubescent, and on usually shorter petioles, and the receptacles are more copiously pubescent. It is related also to *Ficus yucatanensis*, but that species differs in having the proportionally broader leaf blades scarcely or not at all emarginate at the base.

A specimen in the National Herbarium, collected between Salamá and Rabinal, Guatemala, in May, 1904, by O. F. Cook and C. B. Doyle, the writer can not distinguish from *F. goldmanii*. The material, however, is in very poor condition, the receptacles being molded and broken. The leaves are not exactly like those of *F. goldmanii*, and with better material it may be possible to distinguish it specifically. Pringle's no. 3890 was distributed as "*Ficus guadalajarana*, Wats., n. sp.," but some confusion must be involved, for the plant described under that name is a quite different species.

41. Ficus yucatanensis Standley, sp. nov.

Branchlets stout, 5 to 8 mm. thick, yellowish or gray, glabrous; stipules 10 to 15 mm. long, narrowly triangular, attenuate, firm, brown, minutely puberulent outside and sparsely strigose; petioles stout, 1 to 2.4 cm. long, glabrous; leaf blades oval, narrowly oval, or oval-oblong, 8 to 20 cm. long, 4.3 to 9.5 cm. wide, rounded at the base and sometimes subemarginate, 3 or 5-nerved, broadly rounded or obtuse at the apex, coriaceous or subcoriaceous, glabrous, green on the upper surface and closely punctate, beneath pale or golden brown, the costa prominent, stout, with a glandular area at the base, the lateral veins subprominent beneath but very slender, 8 to 11 on each side, distant, straight, divergent at an angle of 45 to 80 degrees, arcuately anastomosing near the margin, the veinlets inconspicuous, laxly reticulate; peduncles geminate, 1 cm. long, glabrate; involucre bilobate, 7 mm. in greatest diameter, the lobes rounded, thin, brown, glabrous; receptacles globose, 2 cm. in diameter, glabrous or nearly so, the ostiole not prominent, 2 to 4 mm. broad, closed by 3 broad brown scales; sepals dark ferruginous.

Type in the U. S. National Herbarium, no. 396917, collected at Chichen Itzá, Yucatán, Mexico, in late January or early February, 1901, by E. A. Goldman (no. 554). There is a specimen of the same collection in the herbarium of the Field Museum of Natural History. Also collected on rocks along the seashore, Cozumel, Yucatán, April, 1901, by E. A. Goldman (no. 657) (N, F).

Related to *Ficus lapathifolia*, but distinguished by the glabrous leaves and nearly or quite glabrous receptacles. The type was determined by Dr. J. M. Greenman as *Ficus trigonata* L. f.[1] The type of that species was obtained by Dalberg in Surinam, but its identification, as stated by Warburg,[2] is obscure, and its description does not suggest the present plant. *Ficus trigonata* has been reported from the West Indies, but Warburg refers all the material so determined to other species.

DOUBTFUL AND EXCLUDED SPECIES.

FICUS BOTRYAPIOIDES Kunth & Bouché, Ind. Sem. Hort. Berol. 15. 1846.

Urostigma botryapioides Miquel, Lond. Journ. Bot. **6**: 538. 1847.

Described from cultivated plants believed to have come from Mexico. Warburg[3] considers it only a form of *F. populnea* Willd., and states that its origin was probably West Indian.

FICUS CALYCULATA Mill. Gard. Dict. ed. 8. Ficus no. 11. 1768.

This species, the first described from Mexico, it has been impossible to identify. It was based upon material sent from Veracruz by Houstoun and grown in England. The essential parts of Miller's description are as follows: "This rises with many shrubby stalks to the height of twelve or fourteen feet, and divides into many smaller branches, which are garnished with oval stiff leaves, which are obtuse; they are four inches long and three broad, of a light green, and stand upon very short foot-stalks, which are joined to a cup, in which the fruit sits; this is globular and the size of a middling nutmeg, of a deep yellow, when ripe, but is not eatable." The description suggests *F. cotinifolia*, except that that has a smaller receptacle than indicated. The locality Veracruz does not necessarily imply that Houstoun's material came from either the city or State of that name, for it was used at that time to indicate Mexico as a whole. The type, if any was preserved, is not to be found in the herbarium of the British Museum, where Miller's herbarium is deposited.

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[1] Suppl. Pl. 441. 1781.

[2] In Urban, Symb. Antill. **3**: 463. 1903.

[3] In Urban, Symb. Antill. **3**: 479. 1903.

FICUS FUSCESCENS (Liebm.) Miquel, Ann. Mus. Bot. Lugd. Bat. 3: 298. 1867.

Urostigma? fuscescens Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 329. 1851.

Young branches thickish, terete, rugose, fuscous; leaves alternate, the blades lanceolate, 13 to 15 cm. long, 4 to 5 cm. wide, acute at both ends, gradually attenuate at the base to the petiole, dark green on the upper surface (black when dry), glabrous, the costa slightly prominent, sulcate, rufous-villosulous beneath, especially on the prominent costa and veins, the margin slightly undulate; petioles pilosulous, 6 to 8 mm. long, canaliculate above; stipules convolute, rufous-villous, lanceolate, acute; receptacles not known.

TYPE LOCALITY: Colipa, Veracruz. Type collected by Liebmann.

The plant may not be a Ficus.

FICUS GUMMIFERA Bertol. Mem. Accad. Sci. Bologna **10**: 40. *pl. 9.* 1859.

Evidently, from the description and illustration, a species of Castilla. According to Mr. H. Pittier it is, apparently, the same as *Castilla guatemalensis* Pittier.[1] The species should, therefore, be known as **Castilla gummifera** (Bertol.) Pittier. The type came from Escuintla, Guatemala.

UROSTIGMA? NUMMULARIA Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 330. 1851.

Founded on sterile specimens obtained at various localities in Mexico by Liebmann. It is evidently not a Ficus.

FICUS NYMPHAEIFOLIA L. Mant. Pl. 305. 1767.

This species was reported from southern Darién, Panama, by Seemann,[2] but he was not certain as to the determination. The species is to be expected in Panama, since it occurs in Colombia. It may be recognized by the broad leaf blades, 19 to 21 cm. long and 16 to 18 cm. wide, deeply cordate at the base and broadly rounded at the apex. The only material seen by the writer is H. H. Smith's no. 1455 from Santa Marta, Colombia.

FICUS PERGAMENEA Galeotti; Miquel, Ann. Mus. Bot. Lugd. Bat. 3: 221. 1867.

Described from sterile cultivated plants. Miquel gives the origin of these, with a query, as Mexico.

FICUS PORTEANA Regel, Gartenflora **1862**: 280. 1862.

In the Index Kewensis[3] the distribution of this species is given as Mexico, but this is evidently an error, for in the original description it was stated that it came from the Philippines.

UROSTIGMA? SCANDENS Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 330. 1851.

This, a new combination at the place cited, was based on *Ficus scandens* Lam. (a true Ficus), and Liebmann cited specimens of his collection from Mirador, Mexico. These, according to Warburg,[4] are really of the genus Marcgravia.

CULTIVATED SPECIES.

FICUS CARICA L. Sp. Pl. 1059. 1753.

The common fig is widely cultivated in Mexico and Central America, and probably has escaped from cultivation in some places, but no specimens have been seen by the writer.

FICUS CRASSINERVIA Willd. Sp. Pl. 4: 1138. 1806.

This is a West Indian species, occurring in Porto Rico, St. Thomas, Guadeloupe, Martinique, and Santa Lucia. A specimen in the herbarium of the Field Museum of

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[1] Contr. U. S. Nat. Herb. **13**: 272. *pl. 35–39. f. 50, 51.* 1910.

[2] Bot. Voy. Herald 195. 1854.

[3] **2**: 962. 1893.

[4] In Urban, Symb. Antill. **3**: 491. 1903.

Natural History, from Moria, Puebla, collected by Nicolas, seems to belong here, and probably was taken from a cultivated specimen, since no similar or closely related species is otherwise known from Mexico. It has glabrous, oval leaf blades 7.5 to 10 cm. long, and nearly sessile, globose receptacles 9 to 15 mm. in diameter.

FICUS ELASTICA Roxb. Hort. Beng. 65. 1814.

SPECIMENS EXAMINED:

COSTA RICA: Nuestro Amo, *Herb. Nac. Costa Rica* 17551 (N).

This, the common rubber plant of the florists, is a native of Asia or Malaysia. It is distinguished by its thick, closely veined, cuspidate leaf blades and elongate receptacles.

FICUS NITIDA Thunb. Ficus Diss. 10. 1786.

?*Ficus arbutifolia* Link, Enum. Pl. 2: 450. 1822, not *F. arbutifolia* Pers. 1807.

?*Urostigma arbutifolium* Miquel, Versl. Med. Kon. Akad. Amsterdam 13: 412. 1862.

?*Ficus polypus* Schiede; Miquel, loc. cit. as synonym.

SPECIMENS EXAMINED:

SINALOA: Mazatlán, 1910, *Rose, Standley & Russell* 14158 (N).

VERACRUZ: Pueblo Viejo, near Tampico, 1910, *Palmer* 368 (N).

MICHOACÁN: Morelia, 1909, *Arsène* 54 (F), 60 (F).

YUCATÁN: Mérida, 1900, *Rivas* 39 (F). Ticul, 1903, *C. & E. Seler* 3869 (F).

Known in Yucatán as "laurel" and "álamo extrangero."

A native of Asia, often planted in tropical America as a shade tree. It is a handsome large tree with wide-spreading, very dense crown and glossy dark green leaves. The leaf blades are broadly obovate, pointed at the apex, glabrous, finely and closely veined; the receptacles are depressed-globose, small, with a 3-lobed involucre.

The descriptions of *Ficus arbutifolia* suggest this species very strongly. Link's species was based upon plants cultivated at Berlin.

FICUS RELIGIOSA L. Sp. Pl. 1059. 1753.

SPECIMENS EXAMINED:

YUCATÁN: Mérida, 1916, *Gaumer* 23191 (F).

PANAMA: Plaza de la Catedral, Panama, 1911, *Pittier* 3399 (N).

Readily recognized by its broadly ovate-deltoid leaf blades, with a linear acumen 4 to 5 cm. long. The tree is known at Mérida as "álamo cubano." It is a native of the East Indies, but is widely grown as a shade tree elsewhere in the Tropics.

FICUS sp.

A specimen collected in the hospital grounds at Ancón, Canal Zone, Panama (*Pittier* 6523), the writer has been unable to determine. It is one of the cauliflorous species, the receptacles being borne in naked panicles. Probably it is an Asiatic plant.

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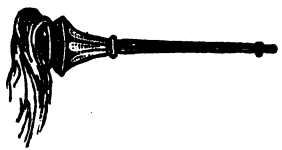

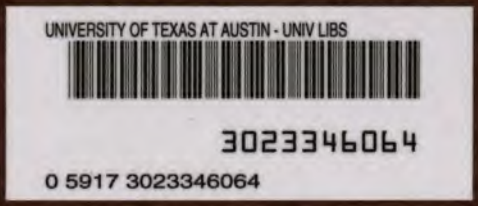
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